YUKON PROTECTED AREAS:
A VALUES FRAMEWORK AND PRELIMINARY DATABASE

prepared for

Department of Renewable Resources
Government of Yukon,
Department of Indian Affairs and Northern Development
Government of Canada,
and
Environment Canada
Government of Canada

by

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11 June 1987

MacPherson
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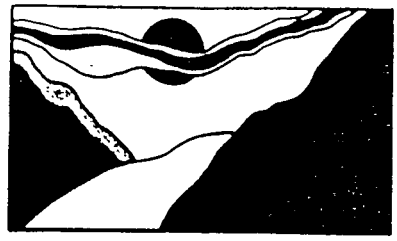

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March 31, 1987

Mr Stephan Fuller
Manager, Policy Analysis and Development
Department of Renewable Resources
Government of the Yukon
Whitehorse, Yukon

Dear Stephan,

On behalf of Western Ecological Services Ltd. and MacPherson Research and Consulting we are pleased to submit a report entitled Yukon Protected Areas: A Values Framework and Preliminary Database.

An executive summary and text of the report jointly prepared by Western Ecological Services Ltd. and MacPherson Research and Consulting, is contained in this volume. We are depositing with you a separate volume entitled "Records in the Yukon Protected Areas Inventory as of March 1987". The latter volume is not identified as a specific numbered appendix because it will be quickly outdated once amendments, additions or deletions are made to the computer database.

Other related reports that will assist users of this database are "User's Guide to dBase 111 Plus Inventory of Yukon Protected Areas" prepared by Michelle A. Kirkpatrick, and "Maps of Proposed and Established Yukon Protected Areas" assembled by Western Ecological Services Ltd. All of these supporting documents are now on deposit with the Department of Renewable Resources, Government of Yukon. We are also depositing with you one high-density diskette that contains the records in the database as of March 31, 1987.

We wish to thank you, as Project Manager, and Julian Inglis, as Scientific Authority, for the opportunity to assist you with this work.

Yours sincerely,

Nancy MacPherson.

Nancy M. MacPherson
MacPherson Research and Consulting

E.B. Peterson

Everett B. Peterson
Western Ecological Services Ltd.
c.c. J. Inglis

IN MEMORY

This report is dedicated to the memory of Lorraine M. Allison, whose untimely death on 26 January 1987 ended her continuing work towards northern conservation. Lorraine's work towards a conservation strategy in the Northwest Territories and her mapping of critical wildlife areas for the Yukon map sheets of the Land Use Information Series influenced the present report and its accompanying database in ways that only Lorraine would have recognized.

EXECUTIVE SUMMARY

The Department of Renewable Resources, Government of Yukon, the Department of Indian Affairs and Northern Development, Ottawa and Whitehorse, and Environment Canada, Ottawa, jointly commissioned the work outlined in this report. At the outset it was specified that the consultants for this work would be under the direction of a steering committee whose members represented the three co-sponsoring departments named above. The consultants were also to develop the study through active collaboration with a Technical Working Group and a Public Working Group.

The study objectives set out in the original statement of work visualized three distinct components: development of a computer-based inventory of existing and proposed protected areas in the Yukon; development of existing and proposed protected area selection criteria; and initial evaluation of protected areas.

Participation of Yukon residents in a Technical Working Group and a Public Working Group led to some significant changes to the original work objectives. The first objective, development of a computer-based inventory, was fully addressed and by the end of this project had advanced to a point that likely exceeded the original intent of the joint sponsors. The second basic component, selection criteria for established and proposed protected areas, is not yet defined because meetings with the working groups revealed a greater interest in the development of a values framework. The third component, involving initial evaluation of protected areas according to specific selection criteria, also evolved differently than originally visualized. Because the focus was on the full range of values that should ultimately be represented in a network of Yukon protected areas, it was suggested at working group meetings that it was premature for the present phase of the study to undertake evaluation of specific areas proposed as protected areas.

It was agreed by the working groups that the development of a values framework is a more useful tool for agencies and planners faced with the design of a system of Yukon protected areas than would a re-definition of protected areas and selection criteria for protected areas. The framework developed in consultation with members of the Technical Working Group and Public Working Group identifies the range of natural and cultural values or features that government agencies and conservation, heritage and native interests feel are worthy of some form of protection in the Yukon.

The values framework provides user agencies with a guide for systematic entries into a computer database, and the latter can be used by planners and decision-makers when considering the range of values represented, for example, in the proposed parks systems plan, in heritage protection plans and in other categories of protected areas. As a conceptual tool, the values framework helps to ameliorate the traditional and often contentious view of protected areas as large tracts of alienated land because, as is evident from the computer database, many of the values to be protected do not need large area designations. Furthermore, many of the records in the database exist as overlapping proposals from proponents of different kinds of protected area systems.

The preliminary database developed during this study is referred to as the Yukon Protected Area Inventory and it presently contains 406 records. Each record consists of 32 fields as listed below.

1. Area Number
2. System
3. Name of Site
4. General Purpose
5. General Location
6. Access
7. Latitude
8. Longitude
9. Ecoregion
10. NTS Map Numbers
11. Area
12. Proponent
13. Management Zone
14. Management Strategy
15. Proposal Date
16. Last Date of Input
17. Overlapping Protected Areas
18. Land Status
19. Special Protection
20. Significance Rating by Proponent
21. Comments
22. Related Inventory Databases
23. Reference

24-32. Values of the Site

It is not the intention of the Yukon protected area database to replace existing resource data inventories but to complement them. There are several detailed databases currently being developed or already in existence. These include: the Natural Features Inventory sponsored by the Yukon Department of Renewable Resources; the Yukon Heritage Inventory

initiated in 1987 by the Heritage Branch of the Department of Tourism; the Recreational Features Inventory sponsored by the Yukon Department of Renewable Resources; and a program by the Yukon Department of Renewable Resources, with financial support from Wildlife Habitat Canada, to continue and expand the identification of key Yukon wildlife habitat. The database resulting from the protected area inventory offers a compilation of information from many sources and, as outlined later, the structure of its fields allows it to be cross-referenced to other databases being developed by agencies of the Government of Yukon and Government of Canada.

This report provides examples of how records in the database can be sorted and indexed. There are also some suggestions for methods by which categories in the values framework can be screened to suggest courses of action that will, collectively, ensure that all values in the framework are ultimately represented in the Yukon's total protected area system. The suggested screening method focusses on values or sets of values, not on geographical areas. The key criteria involved in the proposed screening approach are: present level of protection for the value of interest; present level of interest for the value (proposed versus unproposed); and perceived level of threat for the value.

The following recommendations for follow-up work focus on steps that are logical extensions of the main accomplishment of this study which was development of a values framework and database for established and proposed protected areas in the Yukon.

1. **It is recommended that records placed into the database by the consultants be reviewed, confirmed or modified by specialists most familiar with a given system of protected areas. It is also recommended that, concurrently with the step above, specialists familiar with a given system should confirm whether all of the candidate areas entered into the database for their system of interest still possess sufficient priority, within the system, to remain as candidate sites. This early work should include additional attention to several important fields not yet completed, especially those dealing with land status and overlapping protected area proposals.**

2. **It is recommended that, in addition to the government agencies that were represented on the Technical Working Group, the following**

organizations be invited by letter in 1987 to continue to provide additional entries to the database:

Yukon Fish and Game Association
Yukon Conservation Society
Yukon Historical and Museums Association
D.U. Canada
Yukon Canoe and Kayak Club
Heritage North Inc.
Yukon Wilderness Guides Association
Council for Yukon Indians

It is also recommended that updates to the database be formally scheduled to occur at regular 6-month intervals and that the division responsible for maintenance of the database within the Department of Renewable Resources take steps to ensure that governmental and non-governmental interests have an opportunity to provide data in time for entry into the database on the scheduled amendment dates.

3. It is recommended that data entry for digitized recording of boundaries of protected areas in a computer-based geographic information system is the most effective way to increase the usefulness of the protected area database for land-use planning and protected area systems planning.

4. It is recommended that a follow-up project be funded by the Government of Yukon, specifically to prepare information on potential protected areas of cultural significance for inclusion in the database. This work could be undertaken initially as a pilot project and the project should be selected jointly by the bands and the sponsoring agencies. The project should be jointly managed by the sponsoring agencies, the Council for Yukon Indians and the bands. Such a project must be co-ordinated with existing work of the Yukon Heritage Inventory.

5. It is recommended that the screening process, based on suggestions outlined in Section 6, be conducted by the agencies involved in planning and development of protected areas in the Yukon.

6. It is recommended that the Public Working Group and Technical Working Group established for this project be maintained to provide interactive exchange on further development of protected areas in the Yukon.

7. It is recommended that early attention be given to software requirements and database design that would allow full computer integration between the Yukon Protected Area Inventory and other resource inventories now underway.

8. It is recommended that an important step towards a Yukon Conservation Strategy would be to focus directly on the co-ordinated development of various protected area system plans designed for the eventual protection of all values in the comprehensive framework of values.

ACKNOWLEDGEMENTS

This work could not have been completed without the contributions of a large number of Yukon residents. The project was assisted by a Technical Working Group (Richard Collier, Marg Crombie, Beth Ereaux, Yvonne Harris, Manfred Hoefs, George Mackenzie-Grieve, Hugh Monaghan, Michael Murphy, George Nassiopoulos, Cathryn Paish, Don Russell, Kees Ruurs, Al von Finster and Kathleen Warren) and a Public Working Group (Rob Conrad, Paul Dabbs, Dale Eftoda, Laurie Hendersen, Lori Jackson, Linda Johnson, Gavin Johnston, Larry Leigh, Hector Mackenzie, Sam Miller, Vic Mitander and Tom Munson).

All members of the two working groups contributed their time and creative thought to the task; without their input we would not have developed the database or the values framework for Yukon protected areas to the degree provided. Work sheets completed by Lori Jackson and Linda Johnson were particularly helpful in enlarging the examples of human use values in the database.

This report is the result of a contract from the Department of Supply and Services (DSS File 25ST.A7135-6-0014). We thank the sponsoring agencies of this project for their joint support: Department of Indian Affairs and Northern Development, and Environment Canada, Government of Canada; and Department of Renewable Resources, Government of the Yukon. Technical and administrative support was provided by the Steering Committee made up of: Julian Inglis (Scientific Authority), Department of Indian Affairs and Northern Development, Ottawa; Bruce Chambers, Department of Indian Affairs and Northern Development, Whitehorse; Joe Ganske, Department of Indian Affairs and Northern Development, Whitehorse; Tim McTiernan, Department of Renewable Resources, Whitehorse; Francois Bregha, Environment Canada, Ottawa; and Stephan Fuller (Project Manager), Department of Renewable Resources, Whitehorse. Advice from the Steering Committee and the continuous encouragement and support from the Project Manager is much appreciated.

We are also grateful to Yip-Hoi Chan for assistance with dBase III programming and to Michelle Kirkpatrick for her cheerful preparation of numerous drafts of the report and the dBase III database.

We hope that both the database and the values framework provide assistance to agencies, planners and the public to design a system of protected areas for the Yukon.

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1. INTRODUCTION

The Department of Renewable Resources, Government of Yukon, the Department of Indian Affairs and Northern Development, Ottawa and Whitehorse, and Environment Canada, Ottawa, jointly commissioned the work outlined in this report. The basic components specified in the terms of reference are outlined in Section 1.1. Other recent events that form part of the background to this study are described in Section 1.2. At the outset it was specified that the consultants for this work would be under the direction of a steering committee whose members represented the three co-sponsoring departments named above. The consultants were also to develop the study through active collaboration with a Technical Working Group and a Public Working Group. This specification led, not surprisingly, to a dynamic interchange that included a significant variety of interpretations of what the job was all about. It also resulted in some deliberate changes in emphasis to the steps listed in the original 'statement of work'. To place this evolutionary process in perspective, Section 1.1 includes a reproduction of the statement of work and then identifies several tasks that were modified or which were judged to be the task of future users of the database rather than the consultant developers of the database.

1.1 Objectives of the study

The study objectives set out in the original statement of work were:

1. Overview

   The consultants will undertake a work program based on three components.

   A. Computer-based inventory of existing and proposed "protected areas" in the Yukon.

   B. Development of existing and proposed "protected area" selection criteria.

   C. Initial evaluation of "protected areas".

The consultants will be supervised by a Project Steering Committee, and will work with two separate task groups: a Technical Working Group; and a Public Working Group to allow for continuing interest group involvement.

2. Component A: Inventory

Working with the Technical Working Group (TWG) and the Public Working Group the consultant will:

a) define the term "protected area" and identify the categories to be included in the computer-based inventory;

b) develop the format of the computer-based inventory system (TWG only);

c) inventory the existing and proposed protected areas and input these to the computer system, creating a comprehensive (but open-ended) database (TWG only).

3. Component B: Selection Criteria

Working with both TWG and the Public Working Group the consultant will:

a) review the TWG progress in the development of the "protected areas" inventory (and modify as necessary);

b) develop selection criteria which will be used to screen and evaluate the inventory of "protected areas" proposals.

4. Component C: Initial Evaluation

Working with both the TWG and the Public Working Group the consultants will:

a) apply the selection criteria to a representative set (selected from the categories in the database) of "protected area" proposals;

b) modify the selection criteria as necessary and present these in case study format;

c) prepare a final report including: documentation of the computer based inventory; the procedures used in developing the selection criteria and; a final set of recommended selection criteria (including the case studies).

5. Public Involvement

Public involvement is an important component of the work program and will be facilitated through the establishment of a Public Working Group. The group will be chaired by a member of the Project Steering Committee with the consultant acting as facilitator. The public working group will participate in all phases of the work program except where indicated.

The Public Working Group will:

a) provide views on the range of values to be represented in a system of protected areas;

b) provide advice on the criteria to be used for selection of "protected areas" in the Yukon;

c) review drafts of the final report and act as a sounding board for ideas and perspectives on "protected areas" in the Yukon.

The membership of the Public Working Group will be developed by the Project Steering Committee.

Participation of Yukon residents in a Technical Working Group and a Public Working Group led to some significant changes to the original work objectives listed above. The first key objective, development of a computer-based inventory, was fully addressed and by the end of this project had advanced to a point that likely exceeded the original intent of the joint sponsors.

The second basic component, selection criteria for established and proposed protected areas, is not yet defined because meetings with the working groups revealed a greater interest in the development of a values framework. This evolution is described in more detail in Section 2.2 and Section 3. The revised approach forced working group members and the consultants to focus on a comprehensive values framework which was specific to Yukon interests and which would be broad enough to capture most of the values to be considered in the design of a Yukon protected area system.

The third component, involving initial evaluation of protected areas according to specific selection criteria, also evolved differently than originally visualized. Because the focus was on the full range of values that should ultimately be represented in a network of Yukon protected areas, it was suggested at working group meetings that it was premature for the present phase of the study to undertake evaluation of specific areas proposed as protected areas. There were suggestions that this is a task for government, rather than consultants, and that the step would be premature in view of several Yukon processes currently underway with respect to economic development planning, renewable resource management and assessment of the role of conservation in sustainable development.

It was stressed by several members of the Public Working Group that the framework for Yukon protected areas must allow for wise commercial use of resources. It was suggested that such a framework is consistent with the objectives of the World Conservation Strategy and with the definition of conservation adopted by the Task Force on Northern Conservation. In the Yukon, where many residents derive their lifestyle and all or a portion of their income from the harvest of natural resources, it is important not to discourage their commercial use, provided such use allows long-term sustainability of species and ecosystems.

1.2 Background conservation initiatives

This project is a direct result of several significant national and international initiatives in conservation planning. These events, most initiated since 1980, have had considerable influence on the philosophy and direction of conservation of natural resources in the Yukon, and are reviewed here as background to the present project. They are:

The World Conservation Strategy (1980);
The Task Force on Northern Conservation (1984);
National Parks Centennial (1985);
Arctic Marine Conservation Strategy (in progress);
Inuit Regional Conservation Strategy (in progress);
Northwest Territories Conservation Strategy (in progress);
Yukon Conservation Strategy (in progress); and
Circumpolar Conservation Strategy (in progress).

As outlined in Section 1.3, there have also been several other related policy initiatives, including the 1986 Northern Mineral Policy, Yukon 2000 and the work of the Select Committee of the Legislature.

1.2.1 The World Conservation Strategy

In 1980 the International Union for the Conservation of Nature and Natural Resources (IUCN) published the "World Conservation Strategy" in cooperation with the United Nations Environment Program (UNEP) and the World Wildlife Fund (WWF). The aim of the World Conservation Strategy is to encourage sustainable development through the conservation of living

resources. The document explained the necessity of living resource conservation for human survival and suggested how to achieve sustainable development; it also identified priority conservation issues and potential solutions. In particular, the strategy identified those actions that are neeeded to improve the implementation of policy and to integrate conservation and development to ensure that development is sustainable (IUCN 1980).

The World Conservation Strategy stimulated a more focussed approach to the management of living resources and provided policy guidance on how this can be accomplished by three main groups: government policy- makers and their advisors; conservationists and others directly concerned with living resources; and development practitioners, including development agencies, industry and commerce, and trade unions.

The aim of the World Conservation Strategy is to achieve the three main objectives of living resource conservation, namely: maintenance of essential ecological processes and life support systems; preservation of genetic diversity; and sustainable utilization of species and ecosystems. The World Conservation Strategy further identifies that one of the principal requirements necessary to achieve sustainable development is the establishment of a comprehensive network of protected areas that will secure the habitats of threatened, unique and other important species, unique ecosystems, and representative samples of ecosystem types.

Since the release of the World Conservation Strategy in 1980, many nations throughout the world have initiated conservation strategies in their own countries. Most have adopted the objectives and principles of the World Conservation Strategy in the development of strategies for living resource conservation for sustainable development, adapting these to their own conditions and circumstances.

In June 1986, representatives of 52 nations met in Ottawa to report on initiatives towards the development of conservation strategies. Industrialized and developing countries participated in the conference

and reported on conservation strategies which addressed problems ranging from desertification to extinction of species and the over-exploitation of fish and wildlife populations.

1.2.2 Task Force on Northern Conservation

In 1983 the Honourable John Munro, then Minister of Indian Affairs and Northern Development, appointed a Task Force on Northern Conservation to advise the Government of Canada, Government of Yukon and Government of the Northwest Territories on: a framework for a comprehensive conservation policy for northern Canada; a strategy and ongoing mechanism for implementing the policy; and conservation targets which could be met over a two-year period.

Representatives from the territorial governments, Government of Canada, native groups, the mining industry, the oil and gas industry and conservation groups were appointed to the task force.

The task force adapted the following definition of conservation from the World Conservation Strategy:

> **Conservation is the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations, while maintaining its potential to meet the needs and aspirations of future generations; it emphasizes the maintenance of cultural resources and representative or unique ecosystems, their ecological processes and genetic diversity (Task Force on Northern Conservation 1984).**

As pointed out by the Task Force on Northern Conservation and in a recent analysis of the protected area concept in the Northwest Territories (Peterson et al. 1986), previous conservation initiatives in the north have tended to focus almost exclusively on attempts to protect particular geographic areas within the general expanse of land, freshwater and marine areas open to resource development. Those initiatives have been

inclined to foster the development of a confrontational approach to conservation issues and have enjoyed little success. It was for that reason that the task force was given its assignment. The result of that assignment was a proposed conservation strategy consisting of two mutually supportive components -- a system of integrated resource use and a comprehensive network of areas requiring some degree of special protection. Although the present Yukon work specifically focusses on the protected area component of conservation, it does so in the context of integrated resource management.

The Task Force on Northern Conservation specifically recommended the establishment of a process for the selection and designation of protected areas that will contribute to the most effective management and use of the land and water resources. With respect to management of protected areas, the task force in its concluding recommendations proposed the following seven steps:

1) establish immediately a comprehensive network of protected areas;
2) designate the protected areas according to a predetermined set of criteria;
3) establish without delay those protected areas already sufficiently well documented that meet the criteria;
4) withdraw from general use other endangered potential protected areas, the status and boundaries of which would not be finalized until subjected to the land use planning process;
5) accompany all withdrawals with a timetable for action and final decision;
6) review of all withdrawals after three years by the responsible legislative authority;
7) issue a public statement explaining the reason for the revocation of protection previously applied to a given area. (Task Force on Northern Conservation 1984)

Through a news release in early 1986, the conservation principles, goals and broad strategy outlined in the report of the Task Force on Northern Conservation have been endorsed in principle by the Government of Yukon, Government of the Northwest Territories, and the federal departments of Indian Affairs and Northern Development and Environment (Government of Yukon 1986a). The adoption in principle of the task force report by the sponsoring governments was the first step taken towards implementation of the seven key recommendations of the task force.

1.2.3 The National Parks Centennial

The year 1985 marked the centennial of the establishment of Canada's first national park. In keeping with the celebration of the centennial, Parks Canada sponsored Heritage for Tomorrow: The Canadian Assembly on National Parks and Protected Areas, a conference held in Banff, Alberta in September 1985. Through sponsorship from Parks Canada, non-government groups or "caucuses" from across Canada reported on the status of parks and conservation planning in their respective regions. Caucuses participated from British Columbia, the Prairies, Ontario, Quebec, Atlantic Canada, the Northwest Territories and the Yukon. Prior to the conference, each caucus held public meetings and workshops to discuss the status of parks and conservation in its region. Recommendations were taken from these public meetings and presented to the Canadian Assembly in Banff.

The Yukon Caucus to the Canadian Assembly met as a workshop of interested participants from government departments, non-governmental organizations and the public. A working group synthesized several overriding themes and presented them as the recommendations of the Yukon Caucus, namely:

1) that greater emphasis be placed on the education of resource managers and the public regarding the values of cultural and natural heritage conservation;

2) that the conservation planning process for cultural and natural resource management involve the public in decision-making through consultation and review of draft policies and management plans;

3) that more native people be involved in the management, planning and interpretation of natural and cultural heritage;

4) that existing native place names have priority for cultural and natural features and protected areas in the Yukon;

5) that native land claim settlements be of the highest priority;

6) that government agencies, public interest groups and the Yukon public continue to work cooperatively toward the conservation of cultural and natural heritage; and

7) that existing legislation be utilized to its fullest extent to preserve heritage resources (Yukon Caucus 1985).

The Yukon Caucus Report, while sponsored by non-governmental groups, has successfully influenced some government planning and initiatives, particularly with respect to public participation and broadening the range of values included in conservation planning.

1.2.4 Arctic Marine Conservation Strategy

In late September and early October 1986, the Department of Fisheries and Oceans held a workshop in Yellowknife to discuss the framework for an Arctic Marine Conservation Policy. Representatives participated from the Government of Canada (Environment Canada, Department of Fisheries and Oceans, and Department of Indian Affairs and Northern Development), Government of Yukon, Government of the Northwest Territories and from several aboriginal organizations of the north (Baffin Region Inuit Association, Cree Regional Authority, Hamlet of Pond Inlet, Inuit

Tapirisat of Canada, the Inuvialuit, Kativik, Kitikmeot Inuit Association, Labrador Inuit Association, Makivik Corporation, and Tungavik Federation of Nunavut).

The following purpose was identified as the essence of an Arctic Marine Conservation Strategy:

> "To ensure the future health and well being of Arctic marine ecosystems thereby enabling Canada to fulfill its national and international responsibility in the Arctic, and to provide for the sustained utilization of Arctic marine resources, in particular, by Arctic peoples" (Department of Fisheries and Oceans 1986).

The strategy is in draft form at present and is scheduled for public release in 1987. The policy is based on several fundamental principles to govern activities implemented through the Arctic Marine Conservation Strategy. One of three actions acknowledged as "conservation tools" for accomplishing the strategy is the establishment of a system of marine protected areas and development of criteria for selection of marine protected areas.

1.2.5 Inuit Regional Conservation Strategy

At the 1983 Inuit Circumpolar Conference in Iqaluit, there was a resolution urging that an Inuit Regional Conservation Strategy be developed jointly by all circumpolar aboriginal nations. At the 1986 Circumpolar Conference in Kotzebue, Alaska, a draft strategy was distributed to all participants. The 1986 conference advanced the previous work towards a draft Arctic Policy for the circumpolar region. The drafting of the basic principles is intended as a framework for the goals of an arctic policy, to indicate further initiatives, to draw attention to the overlapping nature of the issues involved and to articulate arctic principles in such a way that they may be used to help shape the policies of nation-state governments, even in the absence of a fully stated Arctic Policy (Inuit Circumpolar Conference 1986). In all, six major issues were delineated and draft principles were presented for

each of the principles. One of the major subject areas was environmental issues, including the relationship between conservation and development. A fundamental goal of the Inuit Circumpolar Conference with respect to the environment is "to protect the delicate Arctic Environment, including marine and other resources upon which Inuit depend" (Inuit Circumpolar Conference 1986).

To this end, 23 draft principles on environmental protection were provided, with emphasis on a holistic approach and the integrity of the circumpolar environment. An essential component is the relationship between conservation and development, consistent with the goals of the World Conservation Strategy and the World Charter for Nature. The latter charter was adopted unanimously by the United Nations and it sets the stage for the role of nations on behalf of their citizens, born and yet unborn, with respect to the sustainable use of living natural resources (Miller 1986, Wood 1985).

Draft Principle 11 on Environmental Protection calls for:

> "A Regional Conservation Strategy for the Inuit circumpolar homeland should be developed and implemented that is consistent with the World Conservation Strategy (WCS) and the World Charter for Nature. Particular attention should be paid to the three main objectives of WCS, namely: a) to maintain essential ecological processes and life-support systems, on which human survival and development depend; b) to preserve genetic diversity; and c) to ensure sustainable use of species and ecosystems" (Inuit Circumpolar Conference 1986).

With respect to protected areas, Draft Principle 17 on Environmental Protection specifies that "Special protections in the Arctic should be considered for unique ecosystems and habitats of rare, threatened and endangered species" (Inuit Circumpolar Conference 1986).

The work of formulating the draft principles is on-going and is subject to evaluation and modification by Inuit delegates from the circumpolar

region. The basic principles and the Arctic policy are viewed as a flexible blueprint that will reflect the needs and priorities of Inuit across the circumpolar region.

1.2.6 Northwest Territories Conservation Strategy

The Government of the Northwest Territories is undertaking a variety of policy development projects designed to provide a basis for a regional conservation strategy in the Northwest Territories. As recommended in the Report of the Task Force on Northern Conservation, the developing strategy will include a better integrated system of resource management and a protected areas system. Substantial sections of these initiatives will be completed in 1987/1988.

1.2.7 Yukon Conservation Strategy

It is envisaged that a Yukon Conservation Strategy, currently under development, will integrate the objectives and proposed courses of action associated with the evolving protected area system plan and strategic environmental management framework (Figure 1). The present report will serve as a background document for development of a protected area system plan which has the potential to be incorporated into a Yukon Conservation Strategy.

1.2.8 Circumpolar Conservation Strategy

Taken together, the Inuit Regional, Arctic Marine, Northwest Territories and Yukon strategies will, in effect, comprise a conservation strategy for northern Canada. With this as a starting point, the Canadian government will be in a good position to assist in the development of a circumpolar strategy, as recommended at the Ottawa World Conservation Strategy conference in June 1986. One of the resolutions passed at the latter conference specifically focussed on ways that sustainable development can be applied in the circumpolar region.

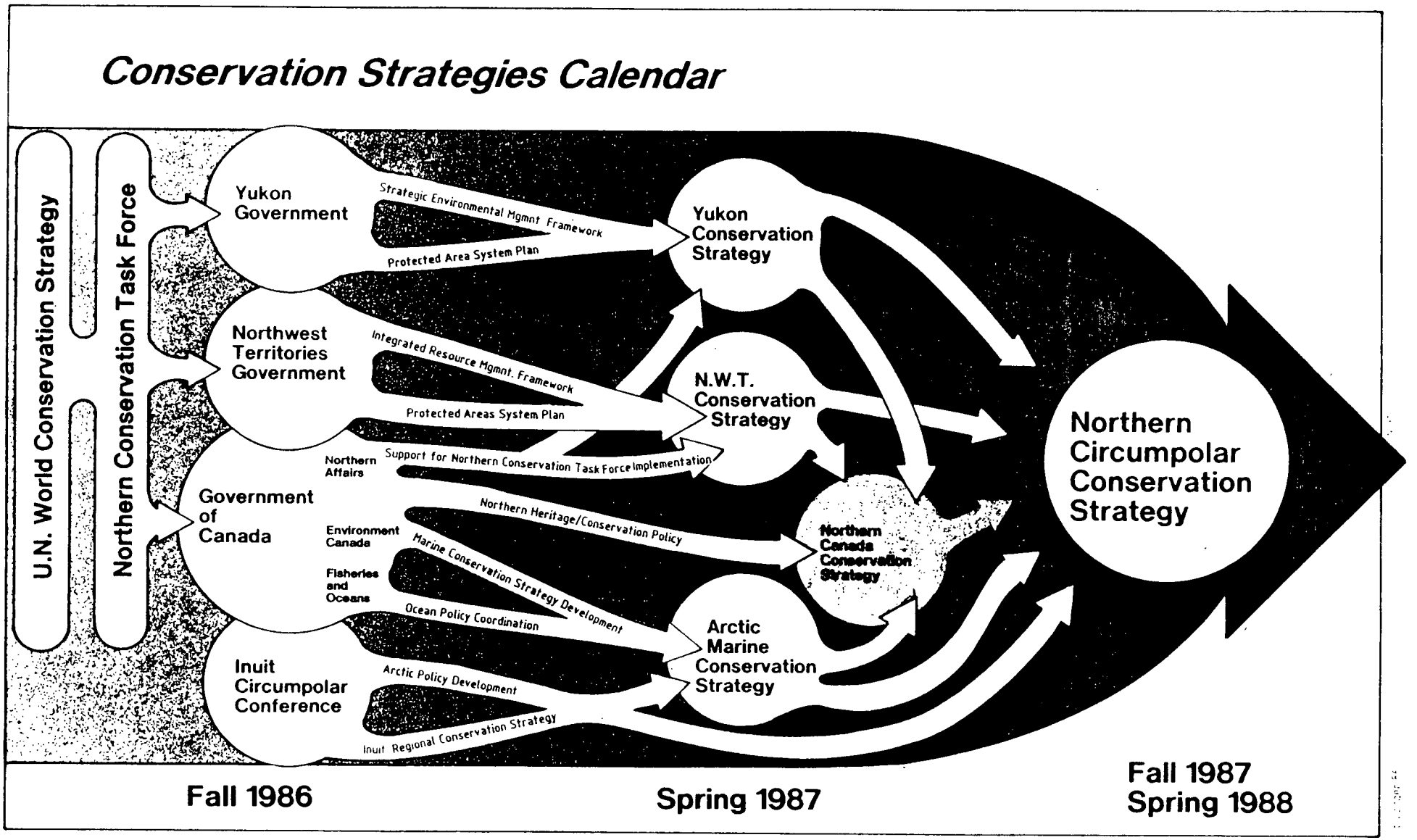

Figure 1. Yukon conservation initiatives in relation to other proposed elements of the circumpolar conservation strategy. The target dates shown are very tentative.

Relationships among the initiatives that are contributing to a circumpolar conservation strategy are graphically displayed in Figure 1.

1.3 Additional Related Policy Initiatives

Several recent policy initiatives in the north have served to reinforce the developing momentum for a Yukon Conservation Strategy. These include the Northern Mineral Policy, the Yukon 2000 initiatives and the work of the Yukon Legislative Select Committee on Renewable Resources. In addition, a Yukon Heritage Inventory was initiated in 1987.

1.3.1 Northern Mineral Policy

The recent publication of the Northern Mineral Policy (Department of Indian Affairs and Northern Development 1986) identifies several policy commitments in relation to mineral development and conservation initiatives. These commitments could influence protected areas in the north in several ways because they call for: clarification of the disposition of potential IBP sites within the next two years to remove the uncertainties of their status; review of boundaries of bird sanctuaries; review of resource utilization in the Thelon Game Sanctuary, in consultation with aboriginal associations, to ensure the widest range of activities compatible with the original goal of providing protection to muskox populations; and maximizing the land area available for mineral exploration and development while ensuring protection for cultural and wildlife resources (Department of Indian Affairs and Northern Development 1986).

1.3.2 Yukon 2000: Economic Development Strategy

In 1986 the Government of Yukon initiated an economic development planning process called Yukon 2000 (Government of Yukon 1986b). This strategy recognized that the proper conservation of natural resources is critical to ensure a sustainable economic future in the Yukon. Working groups were established to examine different sectors of the economy, and to offer recommendations to the Government of Yukon on ways to

strengthen these different sectors. Workshops were held on such subjects as: the non-wage economy; hunting, guiding and trapping; agriculture; forestry; fisheries; trades and services; mining; tourism; and infrastructure.

Throughout the Yukon 2000 planning process there was a strong emphasis on sustainable development, the need to protect the renewable resource base of the north, and the need for a complimentary link between development requirements and environmental concerns. The need for a Yukon Conservation Strategy was articulated in several workshops, although there was a strong emphasis on multiple use rather than a specific focus on a protected area system for the Yukon.

1.3.3 Work of the Select Committee of the Legislature

During 1986 a Select Committee of the Yukon Legislature undertook a review of the policies and activities of the Department of Renewable Resources (Yukon Legislative Assembly, Select Committee of the Legislature 1986). A portion of the review focussed on parks and protected areas. In relation to parks and protected areas the Select Committee made three major recommendations:

> The Government of Yukon, in cooperation with the federal government and in consultation with the public, should identify critical habitat and environmentally sensitive areas for their preservation;
>
> The Government of Yukon should develop a policy to establish a Territorial parks system;
>
> Wherever large tracts of land are identified for Territorial Park status, the park should be designated 'multi-use'.

The all-party committee, following an extensive set of public hearings, reported the positive views of Yukoners towards a comprehensive system of protected areas. Most significantly, they re-endorsed the work of the Task Force on Northern Conservation.

The Department of Renewable Resources has a mandate to respond in a comprehensive manner to the Select Committee recommendations. This will provide an opportunity to issue a draft Parks and Outdoor Recreation System Policy.

2. COMPONENTS OF THIS PROJECT

In undertaking this particular project, the sponsoring agencies recognized the need to establish one of the basic components of a Yukon Conservation Strategy. That basic component is a structured inventory of established and proposed protected areas. This project addressed the technical groundwork necessary to plan for a system of protected areas in the Yukon, for ultimate incorporation into a Yukon Conservation Strategy. The key steps undertaken in this project are outlined below.

2.1 Formation of a Technical Working Group and a Public Working Group

The contractors for this project and the sponsoring agencies agreed that participation by both government agency representatives and representatives of public interest groups and native organizations was essential to build a common understanding about the necessary components of a system of protected areas.

It was decided that two groups would be formed to advise on the development of the database and the values framework. A Technical Working Group was formed from representatives of agencies most involved in planning for Yukon protected areas. The following persons made up the Technical Working Group:

Richard Collier - Government of Yukon, Department of Tourism (Heritage Branch);

Marg Crombie - Government of Canada, Department of Indian Affairs and Northern Development (Environmental Planning Unit);

Beth Ereaux - Government of Yukon, Department of Renewable Resources (Fish and Wildlife Branch);

Yvonne Harris - Government of Yukon, Department of Renewable Resources (Parks, Resources and Regional Planning Branch);

Manfred Hoefs - Government of Yukon, Department of Renewable Resources (Fish and Wildlife Branch);

George Mackenzie-Grieve - Government of Canada, Environment Canada (Environmental Protection Service);

Hugh Monaghan - Government of Yukon, Department of Renewable Resources (Fish and Wildlife Branch);

Michael Murphy - Government of Canada, Environment Canada (Parks Canada);

George Nassiopoulos - Government of Yukon, Department of Renewable Resources (Territorial Parks Unit);

Cathryn Paish - Government of Yukon, Department of Renewable Resources (Parks, Resources and Regional Planning Branch);

Don Russell - Government of Canada, Environment Canada (Canadian Wildlife Service);

Kees Ruurs - Government of Yukon, Department of Renewable Resources (Territorial Parks Unit);

Al von Finster - Government of Canada, Department of Fisheries and Oceans;

Kathleen Warren - Government of Canada, Department of Indian Affairs and Northern Development (Northern Land Use Planning Unit).

Stephan Fuller (Government of Yukon, Department of Renewable Resources), who was Project Manager for this study, served as chairman of the Technical Working Group.

This group exchanged information about the use of existing databases, as well as plans for development of new or expanded databases. They also advised on the design of the database entry fields according to their needs as user agencies, reviewed preliminary examples of entries into the database, offered advice on the categories to be included in the values framework, and suggested or provided documents containing protected area information. Most of the emphasis in the Technical Working Group was on the structure and technical aspects of the database and its potential output.

Organizations with a major focus on conservation and heritage interests in the Yukon were invited to participate in a separate Public Working Group. The following persons took part in meetings of the Public Working Group:

Rob Conrad - Heritage North Inc.;

Paul Dabbs - Yukon Conservation Society;

Dale Eftoda - D.U. Canada;
Laurie Hendersen - Tuak Environmental Services;
Lori Jackson - Heritage Consultant;
Linda Johnson - Yukon Historical and Museums Association;
Gavin Johnston - Northern Biomes Ltd.;
Larry Leigh - Yukon Fish and Game Association;
Hector MacKenzie - Wilderness Guides Association;
Sam Miller - Old Squaw Lodge;
Vic Mitander - Council for Yukon Indians; and
Tom Munson - Council for Yukon Indians.

The Public Working Group provided views representative of the major Yukon conservation and heritage public interest groups and native organizations. The focus taken by the Public Working Group was different from that of the Technical Working Group. While the Public Working Group members advised on both the design of the database and the values framework, they concentrated their efforts on the development of the range of values to be represented in the framework for protected areas in the Yukon. In addition, they were invited to complete work sheets for further entries into the database on protected areas.

The combined Technical Working Group and Public Working Group provided the views, knowledge and experience of about 25 individuals, representing over 20 different government agencies and non-governmental organizations. These groups held five one-half to one-day sessions between September and December 1986.

2.2 A values framework for protected areas in the Yukon

It was agreed by the working groups that the development of a values framework would be a more useful tool for agencies and planners faced with the design of a system of Yukon protected areas than would a re-definition of protected areas and selection criteria for protected areas. The framework developed in consultation with members of the Technical Working Group and Public Working Group identifies the range of

natural and cultural values or features that government agencies and conservation, heritage and native interests feel are worthy of some form of protection in the Yukon.

The identification of values relevant to the cultural and natural heritage of the Yukon was assisted by two previous exercises in selection of values to represent the northern Canadian environment. The first was developed by the Task Force on Northern Conservation (1984). The components deemed by the Task Force to need some degree of protection within a system of protected areas in the north included the following:

prehistoric and historic archaeological sites;
burial grounds;
traditional resource-gathering areas;
outstanding and unique landmarks;
outstanding and representative landscapes;
critical habitat* for fish and marine mammals;
critical habitat* for migratory birds;
critical habitat* for terrestrial wildlife;
habitat for rare or endangered species;
representative, unique or sensitive areas for education and research;
sites for preservation of genetic diversity; and
recreation and tourism areas.

Subsequently, the Northwest Territories Department of Renewable Resources and the Department of Indian Affairs and Northern Development commissioned a study entitled **Evaluation of the "Protected Area" Concept for the Northwest Territories** (Peterson et al. 1986). The Northwest Territories report reviewed the regional, national and international literature for criteria used to designate protected areas

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* A member of the Public Working Group was of the opinion that the word 'critical' should not have been used by the Task Force because it implies that other habitats used by a wildlife population are unimportant; the suggestion is that if a wildlife population is to survive, it requires all of its habitat not just the 'critical' habitats, such as lambing areas.

and developed from this evaluation a set of values relevant for proposed protected areas in the Northwest Territories, along with a computer-based inventory of existing and proposed categories of protected areas.

The present Yukon study resulted in a database, along with a companion chart of values. The values framework provides user agencies with a guide for systematic entries into the database, and the latter can be used by planners and decision-makers when they wish to consider the range of values represented, for example, in the proposed parks systems plan, in heritage protection plans and in other categories of protected areas. As a conceptual tool, the values framework helps to ameliorate the traditional and often contentious view of protected areas as "large tracts of alienated land" because, as is evident from the computer database, many of the values to be protected do not need large area designations. Furthermore, many of the records in the database exist as overlapping proposals from proponents of different kinds of protected area systems. Also, many of the values can be protected with provisions less restrictive than those provided by park status; some may only require seasonal protection while others may need only small protected core zones and surrounding multi-use buffer areas. Many of the values that can be protected without designation of large protected areas have been forgotten or given inadequate attention in past conservation initiatives.

2.3 A computer database for protected areas in the Yukon

The database of established, proposed or potential protected areas in the Yukon provides a computer inventory, listed by names of the systems that could eventually be represented in the Yukon. Using dBase III Plus software, the inventory was compiled from records, maps, reports and publications from government agencies, public interest groups, native organizations, and from published journal articles.

Information on established or proposed protected areas in the Yukon has not previously been compiled in one list and there has been no way to

find out the range of interests in need of protection in any given geographical area of the Yukon without going to each concerned agency, interest group and Indian band. The capacity of the present inventory to collate, organize and cross-reference natural and cultural areas of interest to one or more geographic areas provides a helpful tool to all interested groups. More significantly, it is a tool that can increase in usefulness if the database is used, updated and amended by all interested groups.

It is not the intention of the Yukon protected area database to replace existing resource data inventories but to complement them. There are several detailed databases currently being developed or already in existence. These include: the Natural Features Inventory sponsored by the Yukon Department of Renewable Resources; the Yukon Heritage Inventory initiated in 1987 by the Heritage Branch of the Department of Tourism; the Recreational Features Inventory sponsored by the Yukon Department of Renewable Resources; and a program by the Yukon Department of Renewable Resources, with financial support from Wildlife Habitat Canada, to continue and expand the identification of key Yukon wildlife habitat. The database resulting from the protected area inventory offers a compilation of information from many sources and, as outlined later, the structure of its fields allows it to be cross-referenced to other databases being developed by agencies of the Government of Yukon and Government of Canada.

3. CONSENSUS-BUILDING FOR THE VALUES FRAMEWORK OF YUKON PROTECTED AREAS

The process of arriving at an acceptable framework of values to represent a system of protected areas in the Yukon involved consultation with both the Technical Working Group and Public Working Group. A commitment to develop a framework that represented the full range of values judged significant by government planning, resource management and policy personnel, as well as by native people and conservation and heritage interests, meant that some degree of consensus had to be achieved.

To achieve consensus on the values framework, the following process was initiated:

- an initial agreement was made between both groups that they would review the work of the consultants, and be free to make whatever suggestions they wished to make;
- suggestions were incorporated into the revised drafts of the framework as the project progressed, and both groups had an opportunity to comment on the changes;
- a first draft of the framework was prepared by the consultants, drawing upon the work of the Task Force on Northern Conservation as well as the work on protected areas completed in 1986 for the Northwest Territories Department of Renewable Resources and the Department of Indian Affairs and Northern Development;
- a joint meeting was held with members of both groups present to finalize the framework presented in this report.

The first draft of the values framework, prepared as part of an evaluation of the protected area concept in the Northwest Territories (Peterson et al. 1986) is reproduced in Table 1.

The values framework shown in Table 1 underwent many revisions during meetings of the two working groups, as members worked through specific Yukon examples and refined their ideas and concepts of how the framework could be used. The contrast between the Northwest Territories and Yukon approaches should be noted. The values for the Northwest Territories

TABLE 1

VALUES OF "PROTECTED AREAS" PROPOSED FOR THE NORTHWEST TERRITORIES

(Source: Peterson et al. 1986)

Value ranking	Major subject area	Secondary subject area	Type or function of area	Geographic significance
primary secondary - none given	cultural	historic archaeologic human use	spiritual domestic harvest recreation representative unique diverse research monitoring	local regional national international - none given
	geological (including hydrological)	physiographic geomorphic paleologic river lake wetland marine	representative unique diverse research domestic harvest productive	
	botanical assemblages	polar desert tundra alpine tundra boreal forest forest-tundra transition marine rare, endangered, threatened species		
	faunal assemblages			
	fish	marine trout and arctic char whitefish rare, endangered, threatened species other species	migration production (spawning, nesting, calving) concentration (summer staging, feeding) winter range population research domestic harvest	
	birds	waterfowl seabird raptor rare, endangered, threatened species other species		
	mammals	caribou moose muskoxen sheep bison bear wolf and fox aquatic furbearer seal and walrus whale rare, endangered, threatened species other species		

TABLE 2

VALUES FRAMEWORK DEVELOPED BY WORKING GROUPS FOR YUKON PROTECTED AREAS

Value ranking	Major subject area	Specific subject area	Type or function of area	Significance
primary secondary	human use	past use present use	archaeological site ceremonial site domestic harvest gathering site habitation healing site industrial recreation research/education sacred site scenic viewing spiritual site structure trading site traditional pursuit transportation feature travel route wilderness appreciation	local regional national international
	geomorphology (including geological and physiographic features)	lake mountain river valley plain ..... alpine feature bedrock feature depositional feature erosional feature marine feature periglacial feature permafrost feature subalpine feature unglaciated feature volcanic feature ..... ancient lakebed drumlin/esker estuary fossil (animal or plant) gemstone glacier karst feature kettle lake moraine patterned ground sand dune spring talus slope wetland	diverse collecting rare, endangered or threatened feature representative research/education unique	
	ecological communities	alpine tundra community boreal forest community coastal community estuarine community forest-tundra transition community freshwater community marine community polynya community (marine & freshwater) relict grassland community riparian community tundra community wetland community botanical/paleobotanical feature	diverse collecting productive rare, endangered, or threatened species representative research/education unique	
	amphibians and invertebrates	----	concentration (caribou staging or river crossings; waterfowl staging, moulting or feeding areas; mineral licks) domestic harvest migration population production (spawning, nesting or calving areas) rare, endangered, or threatened species representative research/education unique winter range	
	birds	duck falcon goose other bird species other raptor species seabird swan other waterfowl species		
	fish	Arctic char marine species other fish species salmon trout whitefish		
	mammals	aquatic furbearer bear bison caribou deer elk goat moose muskoxen muskrat other mammal species seal and walrus sheep terrestrial furbearer whale wolf		

evaluation of protected areas was prepared by compiling the values represented in established protected areas and in other protected areas that had already been proposed. By contrast, the values framework for Yukon protected areas was prepared by asking representatives of the two working groups what values they thought should be part of a comprehensive protected area system plan, whether or not the values were presently represented in established or proposed protected areas. The latter approach forced working group members to conceptualize a system of protected areas specific to Yukon interests and values. The result is a values framework (Table 2) that reflects the reality of the Yukon's natural and cultural environment and the potential diversity of it's protected area system. This makes the values framework unique to the Yukon, and of particular importance to the structure of a Yukon protected area system. Values of interest to Yukon native people are an integral part of the framework shown in Table 2. In this context, it is recognized that the values framework now contains terms such as raptor, archaeological site, ceremonial site, healing site or sacred site, the locations of which may often need to remain confidential to reduce loss by vandalism. To maintain confidentiality, records for such sites will either need to be omitted from the database or be entered without location information. Even if the database eventually has few, if any, records of certain potentially confidential categories, it is important to retain such terms in the values framework to reinforce the framework's potential to capture the full diversity of the Yukon's cultural environment.

In working group discussions, the categories that received the most attention and the most revisions were the cultural category and the geological category as used in the Northwest Territories summary chart (Table 1). The cultural category, renamed 'human use' in the Yukon chart (Table 2), is the least developed subject in the literature on protected areas planning. It is also the subject area that the Task Force on Northern Conservation identified as being of special interest to northern Canadians and therefore essential to a system of protected areas. The geological category used in the Northwest Territories (Table 1)

was renamed geomorphology in the Yukon chart and was defined in more detail, allowing the user to focus on values at any of three potential levels - the physiographic level (mountain or plain), the process level (depositional feature or volcanic feature) or the specific landform level (estuary or dune).

Near the end of the consultation process, a joint meeting of the two working groups was held. Drawing upon the wide range of experience and interest within the two groups, general consensus was reached on the values shown in Table 2. An exception was addition of the term 'transportation feature' after the joint meeting of the two working groups. This term was suggested as a more accurate portrayal of the purposes (values) of some example sites prepared for the database by members of the public working group. There were also suggestions of a need to add to the database terms to characterize structures or areas of archaeological interest that are either totally or partially submerged under water. Such characteristics are now recorded in the 'COMMENTS' field rather than the 'VALUES' field.

4. FEATURES OF THE YUKON PROTECTED AREAS INVENTORY DATABASE

4.1 Hardware and software requirements

The preliminary database developed during this study contains 407 records which are reproduced in a separate appendix volume. The present database is contained on one double-sided, high density 5.25-inch diskette. To efficiently use the database it is necessary to have hard-disk capacity on a IBM-compatible personal computer using DOS 3.0 or higher and dBase III Plus database management software, with the latter possibly substituted by compatible compiler software. As outlined in Section 5.2, dBase III Plus software can operate from either a programmed screen menu that leads the user through specific questions or by sort and search commands entered by keyboard. Before presenting examples of sorting capabilities within the database (Section 5.2), it is important to describe the fields within the database.

4.2 Structure of fields within the database

The database consists of 32 fields grouped in the sequence listed below. Numbers of characters presently devoted to each field, together with the shortened name for each field, are listed in Table 3:

1. Area Number
2. System
3. Name of Site
4. General Purpose
5. General Location
6. Access
7. Latitude
8. Longitude
9. Ecoregion
10. NTS Map Numbers
11. Area
12. Proponent
13. Management Zone
14. Management Strategy
15. Proposal Date
16. Last Date of Input
17. Overlapping Protected Areas
18. Land Status
19. Special Protection
20. Significance Rating by Proponent
21. Comments
22. Related Inventory Databases
23. Reference

24-32. Values of the Site

TABLE 3

Number of characters devoted to each of 32 fields in database for Yukon Protected Area Inventory

```
. cisplay structure
Structure for database: C:VALUES.dbf
Number of data records:     406
Date of last update    : 06/09/87
Field  Field Name  Type        Width     Dec
    1  NUMBER      Character       4
    2  SYSTEM      Character      41
    3  NAME        Character      60
    4  PURPOSE     Character      70
    5  LOCATION    Character      20
    6  ACCESS      Character       5
    7  LATITUDE    Character       8
    8  LONGITUDE   Character       9
    9  ECOREGION   Character      60
   10  MAP         Character      80
   11  AREA        Numeric        10       2
   12  PROPONENT   Character      30
   13  ZONE        Character       5
   14  STRATEGY    Character       5
   15  PROPDATE    Character       8
   16  DATAINPUT   Date            8
Press any key to continue...
   17  OVERLAP     Character      60
   18  LANDSTATUS  Character       1
   19  SPECPROT    Character       5
   20  SIGNIF      Character      20
   21  COMMENTS    Character     120
   22  RELATED     Character      10
   23  REFERENCE   Character      60
   24  VALUES1     Character      60
   25  VALUES2     Character      60
   26  VALUES3     Character      60
   27  VALUES4     Character      60
   28  VALUES5     Character      60
   29  VALUES6     Character      60
   30  VALUES7     Character      60
   31  VALUES8     Character      60
   32  VALUES9     Character      60
** Total **                     1240
```

The number of characters allocated to each field will likely need to be adjusted by future users of the database. To reduce diskette space, fields that were unused during this phase of the work were assigned only 1 or 5 characters; these fields can be enlarged if they are used later. In the case of Field 18 (Land Status), only one character was allocated because the only information recorded in this phase of the work was one of three choices ('established', 'proposed' or 'interest') which were represented by **E, P** or **I.** The goal was to decrease search and sort time by keeping the field sizes as small as possible, but to generally avoid the use of coding and abbreviations. The latter compromise was maintained because working group members expressed a strong desire to read print-out of the database in a format that was self-explanatory without decoding. Table 4 is a sample print-out of one record from the database. Where it was necessary to use abbreviations to fit information into the available space of a field, the standardized abbreviations listed in Table 5 were used.

TABLE 4

Sample print-out of a record from the database
of the Yukon Protected Area Inventory

```
AREA NO: 047
SYSTEM:  "MIGRATORY BIRD HABITAT"
NAME OF SITE:  BENNETT LAKE OUTLET MIGRATORY BIRD HABITAT
GENERAL PURPOSE:  PROTECTION OF IMPORTANT WATERFOWL STAGING HABITAT
GENERAL LOCATION:  SOUTHWESTERN YUKON
LATITUDE:  60 10 00
LONGITUDE:  134 42 00
ECOREGION:  LAKE LABERGE
N.T.S. MAP NUMBERS:  105 D/2
AREA KM2:  13
PROPONENT:  CWS
PROPOSAL DATE:  00/00/81
LAST DATE OF INPUT: 31/03/87
LAND STATUS: P
SIGNIFICANCE RATING BY PROPONENT:  IMPORTANT
COMMENTS:  TRUMPETER SWAN AND DUCK SPRING STAGING AREA
REFERENCE:  DENNINGTON 1985
VALUES OF THE SITE: PRIMARY, BIRDS, SWAN, CONCENTRATION, REGIONAL
                    PRIMARY, BIRDS, DUCK, CONCENTRATION, REGIONAL
                    ---, GEOMORPHOLOGY, WETLAND, REPRESENTATIVE, ---
                    ---, GEOMORPHOLOGY, LAKE, REPRESENTATIVE, ---
                    ---, COMMUNITIES, POLYNYA, PRODUCTIVE, LOCAL
```

TABLE 5

Standardized abbreviations used in Fields 2, 12 and 23 of database for Yukon Protected Area Inventory

(see Table 6 for abbreviations used to record values in Fields 24 to 32)

ABBREVIATION	UNABBREVIATED VERSION
Field 2 - SYSTEM	
"ARCTIC INT WILDLIFE RANGE"	- Arctic International Wildlife Range
"ENVIRONMENTALLY SIGNIF AREA"	- Environmentally Significant Area
"NORTH AMER WATERFOWL HABITAT"	- North American Waterfowl Habitat Area
"IBP SITE"	- International Biological Programme Site
Field 12 - PROPONENT	
ARCTIC INT WILDLIFE RANGE SOC	- Arctic International Wildlife Range Society
CCIBP/CT	- Canadian Committee for the International Biological Programme/Conservation Terrestrial
CWS	- Canadian Wildlife Service (Environment Canada)
DIAND	- Department of Indian Affairs and Northern Development
FISH AND OCEANS	- Department of Fisheries and Oceans
HERITAGE BR, DEPT OF TOURISM	- Heritage Branch, Department of Tourism (Yukon)
IUCN/CNPPA	- International Union for Conservation of Nature and Natural Resources/Commission on National Parks and Protected Areas
PARKS CANADA	- Parks Canada (Environment Canada)
INUVIAL DEV CORP	- Inuvialuit Development Corporation
UNESCO/MAB	- United Nations Educational, Scientific and Cultural Organization/Man and Biosphere Programme
US FISH & WILDLIFE SERV	- Fish and Wildlife Service, U.S. Department of the Interior
YUKON FISH AND GAME ASSOC	- Yukon Fish and Game Association
YUKON HIST & MUSEUMS ASSOC	- Yukon Historical and Museums Association
YUKON REN RES	- Department of Renewable Resources (Yukon)
YUKON UNDERWATER DIVING ASSOC	- Yukon Underwater Diving Association
Field 23 - REFERENCE	
ASC ARCH MS	- Archaeological Survey of Canada, archives manuscript
CANADIAN HERITAGE RIVERS BD 1986	- Canadian Heritage Rivers Board 1986
GOV YUKON, DUCKS UNLTD AGREMENT 1984	- Government of Yukon and Ducks Unlimited Agreement 1984
YUKON GAME ORD 1958	- Yukon Game Ordinance 1958
YUKON WILDLIFE ORD 1981	- Yukon Wildlife Ordinance 1981

Of the 32 fields, 26 potentially contain information. The six fields for which it was agreed that information would not be added during this phase of the work include: 6 - Access; 13 - Management Zone; 14 - Management Strategy; 16 - Review Date; 19 - Special Protection; and 22 - Related Inventory Database. It should be stressed that the 26 fields that were used do not necessarily contain information in every field. In many cases there is simply no information available, in other cases there may be information to complete a field but it was not available to the contractors who prepared this preliminary database, and in other cases the task of converting available information into a form that could be recorded in the database was simply too large a task to be undertaken under the terms of reference for this study. When database records are printed (Table 4) the user has the option to program dBase III Plus to print all field names, whether or not the field contains information, which one would wish to do if the goal were to identify information gaps. Alternatively, the print-out can be programmed to print only those fields that contain information, which one would do if the goal is to minimize the length of print-out.

The paragraphs below describe the information provided in each field and the guidelines used to enter information into the fields. A consistent pattern of information entry was ensured by following several arbitrary conventions: all letters were capitalized; standardized abbreviations were used (Table 5); and commas, rather than dashes, were used to separate distinct bits of information in a field. The standard name used in the database is shown in bracketted bold letters.

1. **Area No. (NUMBER)** - Although DBase III will automatically assign a sequential number to each new record, those numbers change as records are omitted or re-ordered. Therefore it was essential to assign a unique and unchanging number to each new record, using the first field entitled **NUMBER**; this feature is important for cross-referencing with other computer-based inventories.

2. **System (SYSTEM)** - This field records the name of the system under which the area is established or proposed. The system names used in this field are listed below and data entry consistently used the titles recorded in heavy print below. The potential kinds of protected areas

listed below under "other kinds of protected areas not yet formally recognized as systems" were given arbitrary, unofficial names surrounded by quotation marks. In a number of cases it was necessary to use standardized abbreviations for the lengthy unofficial names.

International Systems:

BIOSPHERE RESERVE
RAMSAR SITE
WORLD HERITAGE SITE

National Systems:

ARCHAEOLOGICAL SITE
NATIONAL PARK
NATIONAL PARK RESERVE
NATIONAL MARINE PARK
NATIONAL HISTORIC PARK
NATIONAL HISTORIC SITE
NATIONAL WILDLIFE AREA
CANADA LANDMARK
CANADIAN HERITAGE RIVER
CANADIAN HERITAGE TRAIL
MIGRATORY BIRD SANCTUARY

Territorial (Yukon) Systems:

GAME SANCTUARY
GAME PRESERVE
YUKON TERRITORIAL PARK

Systems Involving Joint Jurisdiction:

CO-OPERATIVE HERITAGE AREA
INTERNATIONAL HISTORIC PARK (as used in Parks Canada 1986a)

Other Kinds of Protected Areas Not Yet Formally Recognized as Systems:

"ARCTIC INTERNATIONAL WILDLIFE RANGE" (as used in Calef 1974)

"CARIBOU CONCENTRATION AREA" (D. Russell, Environment Canada, Canadian Wildlife Service, pers. comm., 1986)

"CRITICAL WILDLIFE AREA" (as used on maps of Land Use Information Series, Department of the Environment 1973-1976)

"ENVIRONMENTALLY SIGNIFICANT AREA" (as used in Theberge et al. 1980)

"FOREST RESERVE" (N. Denmark, Department of Indian Affairs and Northern Development, pers. comm., 1986)

"INTERNATIONAL BIOLOGICAL PROGRAMME SITE" (entered as "IBP Site" as as used in Beckel 1975 and Nettleship and Smith 1975)

"KEY AREA FOR BIRDS" (as used in Smyth et al. 1986)

"MIGRATORY BIRD HABITAT" (as used in Dennington 1985)

"NORTH AMERICAN WATERFOWL HABITAT AREA" (as used in Environment Canada and U.S. Department of the Interior 1986)

"NORTHERN YUKON LAZULITE DEPOSIT"

"SPAWNING AREA FOR SALMONIDS" (as used in Department of Fisheries and Oceans 1983))

"WATERFOWL BREEDING AND STAGING WETLAND" (as covered in agreement of understanding between Government of Yukon and Ducks Unlimited 1984)

"WHITE WHALE SANCTUARY" (as used in Berger 1977)

"YUKON HERITAGE SITE" (as used by Heritage Branch, Department of Tourism and by members of Public Working Group)

Amongst the officially recognized protected area systems, the Yukon is not yet represented in terms of a Biosphere Reserve, National Marine Park, National Historic Park, National Wildlife Area, Canada Landmark, Canadian Heritage Trail or Migratory Bird Sanctuary. Amongst the unofficial forms of potential protected areas there is, at present, no publically available information for sites that might be nominated sometime in the future because they are representative or unique Yukon lakes, places of particular importance to Yukon native people, areas

deserving of special protection within municipal boundaries, or areas nominated for special scenic, cultural or resource-harvesting reasons.

3. **Name of site (NAME)** - This field records the name given to the site by the proponent. If the system name is an integral part of the site name, the system name is repeated even though it is already recorded in the previous field (for example, the database records "McArthur Game Sanctuary", not simply "McArthur"). Some exceptions were made in cases where repetition of the system name is cumbersome; for example, "Alsek River" is listed in this field instead of "Alsek River Canadian Heritage River").

4. **General purpose (PURPOSE)** - This field is a brief phrase that describes the main purpose or function of the area, to complement the general information implied by the system name (Field 2) or the values of the site (Fields 24 to 32). For example, the specific theme or subject of a National Historic Site would be identified in this field. Terms used in descriptive phrases of this field could eventually be listed in an index to allow users of the database to search this field. However, for the present phase of the work there was no attempt to define standard words and phrases to make this a reliable searchable field.

5. **General location (LOCATION)** - This field specifies one of four broad regions (**northern Yukon, central Yukon, southwestern Yukon, southeastern Yukon**). For this field, latitude 65 00 N was arbitrarily selected as the division between northern and central Yukon and latitude 63 00 N was the division between central and southern Yukon. In southern Yukon, 134 00 W was the arbitrary division between southeastern and southwestern Yukon.

6. **Access (ACCESS)** - This field was not completed in the present phase of the inventory. It could be developed later, using standardized and searchable terms such as: air access only; water access only; tote-road access only; road access in summer; road access year-round; and various combinations of these phrases. This field can be developed to

meet the specialized interests of different government agencies and could include distance measurements between the area of interest and the nearest identifiable road, together with reference to the flight line and photograph numbers, scale and date of the latest aerial photography of the area.

7. **Latitude (LATITUDE)** - This field records latitude to the nearest second (63 07 10) for a site-specific feature; for larger areas the field records the approximate midpoint to the nearest minute (63 07 00).

8. **Longitude (LONGITUDE)** - This field records longitude to the nearest second (135 15 02) for a site-specific feature; for larger areas the field records the approximate midpoint to the nearest minute (135 15 00).

9. **Ecoregion (ECOREGION)** - This field records the name of the ecoregion or ecoregions (Figure 2) in which the existing or proposed protected area is located, based on ecoregions defined by Oswald and Senyk (1977). For large areas that cover two or more ecoregions, abbreviation of ecoregion names was necessary.

10. **N.T.S. map numbers (MAP)** - This field records the National Topographic Series (N.T.S.) numbers of all map sheets (1:50,000) on which the feature of interest occurs, with a space between the numerical and alphabetical parts of the map number and a comma between map numbers (e.g. 105 D/14, 105 D/15). For the large protected areas such as Kluane National Park Reserve and Northern Yukon National Park it was necessary to record the location according to 1:250,000 map numbers.

11. **Area (AREA)** - This field records the approximate area in square kilometres; for areas over 500 km^2, the area was rounded off to the nearest 10 km^2. The field has space for six digits with two decimal places (999,999.01 km^2) so that small areas can be recorded if such information is available.

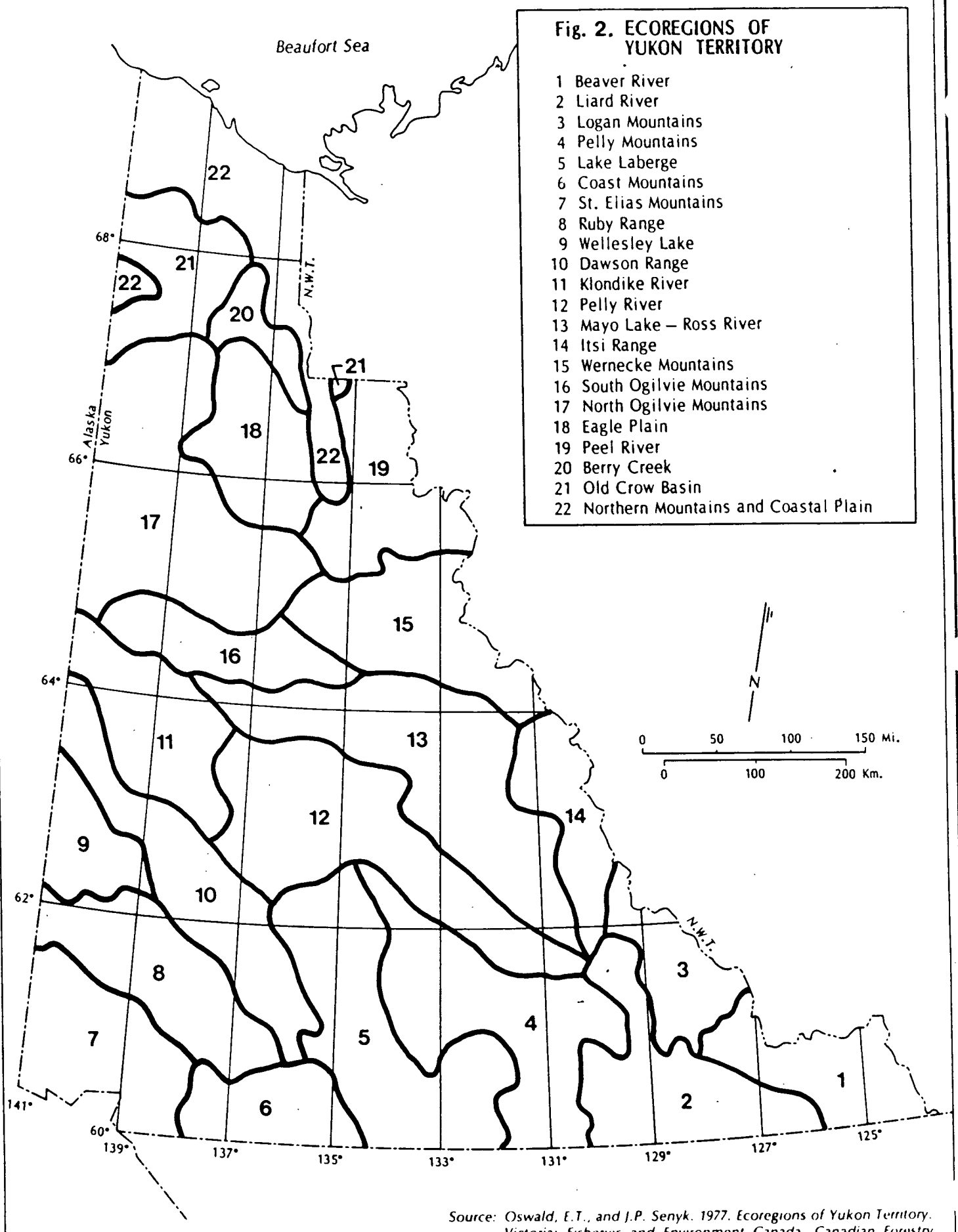


Fig. 2. ECOREGIONS OF YUKON TERRITORY

1 Beaver River
2 Liard River
3 Logan Mountains
4 Pelly Mountains
5 Lake Laberge
6 Coast Mountains
7 St. Elias Mountains
8 Ruby Range
9 Wellesley Lake
10 Dawson Range
11 Klondike River
12 Pelly River
13 Mayo Lake – Ross River
14 Itsi Range
15 Wernecke Mountains
16 South Ogilvie Mountains
17 North Ogilvie Mountains
18 Eagle Plain
19 Peel River
20 Berry Creek
21 Old Crow Basin
22 Northern Mountains and Coastal Plain

Source: Oswald, E.T., and J.P. Senyk. 1977. Ecoregions of Yukon Territory. Victoria: Fisheries and Environment Canada, Canadian Forestry Service, Pacific Forest Research Centre.

12. **Proponent (PROPONENT)** - This field records the name of the agency, organization or community responsible for an expression of interest or a proposal for the protected area. For areas that are formally established or areas in which land withdrawals have been made in anticipation of establishment the responsible agency was listed as the proponent. Where it was necessary to abbreviate agency names, the abbreviations are identified in Table 5.

13. **Management zone (ZONE)** - This field is now vacant but is included for potential future use to allow Yukon administrative subdivisions, such as R.M.O. Districts used by D.I.A.N.D., to be added by resource and land managers.

14. **Management strategy (STRATEGY)** - This field is also vacant but is included for potential future use to permit agencies involved with management or regulation of protected areas to record special requirements to protect the values of interest. For example, this field could include items such as specification of dates or seasons when human disturbances must be excluded if protection is to be accomplished, whether natural fires are to be accepted or suppressed, or other management restrictions.

15. **Proposal date (PROPDATE)** - This field was left vacant if an area of interest was already established or if the area had already been withdrawn in anticipation of establishment. The purpose of this field is to record the date of submission for proposals subject to further review and a specific objective is to indicate how long the proposal has been in existence. The field could record either a proposal date or a submission date, whichever is earliest. This field was completed by the present project only if the necessary information was available. Dates were entered by use of six digits for day, month, year, separated by a slash as in 07/10/86 for 7 October 1986.

16. **Last date of data input (DATAINPUT)** - This field was used to record the last date of data input or data amendment to any of the 32 fields. For the present study, a date of 31 March 1987 (31/03/87) was

recorded for all records. Whenever a record is amended in the future, a new date should be inserted to record the latest date of data input. Because this is a DATE field rather than a CHARACTER field (see Table 3) records can be sorted by date of last data input. This will be a useful feature when there are periodic updates of the database. To sort this field by date, dBASE III Plus requires the user to convert the date to ANSI format (87.03.31 instead of 31/03/87) by typing the command **SET DATE ANSI.**

17. **Overlapping protected areas (OVERLAP)** - This field identifies if there are other protected areas (proposed or established) that overlap in whole or in part with the protected area being recorded. The record was left blank if there was no overlap. The word **MULTIPLE** indicates one or more overlaps, and when this word was entered in the field it was followed by the area number (Field 1) of any protected area that overlaps with the area represented by the present record. Complete identification of overlaps requires additional research and verification beyond what could be done in this phase of the work. Recommended steps to undertake this important task are outlined in Section 7.3.

18. **Land status (LANDSTATUS)** - This field will be very important for future use by management agencies and should be expanded upon as soon as possible. It could include terms such as **INTEREST, PROPOSED, ESTABLISHED, MAP NOTATION** or **WITHDRAWN.** It was also suggested at a working group meeting that **AREA LOST** is another possible category, in reference to previously proposed areas that could not now be established because of irreversible losses of the features of interest. For the present phase of the inventory, this field was simplified by recording one of three status categories: **ESTABLISHED** (E) for features or sites that have been established as part of a protected area system; **PROPOSED** (P) for features or sites not yet withdrawn or established as part of a protected area system; and **INTEREST** (I) for sites for which there is a clearly expressed interest without a specific proposal at present. In the database, designation of an area as **ESTABLISHED** does not necessarily mean that it has full legal protection. For example, the Old Crow Flats Ramsar Site is 'established' as far as the Ramsar Convention is concerned but that designation by itself does not provide any specific legal protection to the site.

19. **Special protection (SPECPROT)** - This field was left vacant in the present review.

20. **Significance rating by proponent (SIGNIF)** - This field was completed by the present project only if the proponent had used some phrase or classification system that indicated the priority or significance rating of the proposed area within the particular system of interest to the proponent. Phrases used by proponents were recorded without any attempt to force the wording into formally defined and standardized priority classes. This poses some limitations on the searchability of this field. However, an index of phrases used to convey high priority, such as "Priority 1" or "Critical", could be prepared later from the print-out of the database to make searches of this field more meaningful. Recorded information does not address the question of which system is of highest priority when a given area has been proposed for protection under several different systems (Field 17); the emphasis is on significance ratings within a system, based solely on opinions of the proponent.

21. **Comments (COMMENTS)** - This field records additional information about the site to identify its outstanding or unusual features and to expand upon information from other fields. Because this field did not use standardized words, a master list of key words used in the comments should be completed to make this field more readily searchable. This field allows the user to identify species where generalized terms such as 'bear' or 'other species' have been used in fields 24-32. The COMMENTS field was also used to record features that are not appropriately covered under the standardized terms for VALUES. For example, a user of the database would need to consult the COMMENTS field to obtain specific botanical information because the master list of values (Table 2) focusses on botanical features at only the 'ecological community' level. If the COMMENTS field is too small for future users, they could add a MEMO field at the end of each record.

22. **Related inventory databases (RELATED)** - This field is included for potential future use to cross-reference to other detailed databases currently under development. The latter includes the Natural Features Inventory (NFI), Outdoor Recreation Inventory (ORI), and Yukon Heritage Inventory (YHI). Other inventories to be referenced may later include

detailed geographically-based inventories of archaeological sites, places or trails of special cultural importance, as well as lakes and other freshwater areas of special importance. It was premature to develop this cross-referencing system in the present study, but this field will allow a given protected area record to be related to the natural features or heritage features that fall within the area of interest. The suggested format for eventual use of this field is to record the related inventory database (e.g. NFI) followed by a listing of the feature numbers from that inventory which fall within the protected area in question.

23. **Reference (REFERENCE)** - This field records the author and date of at least one key reference for the candidate site, with priority given to references that contain a relatively detailed map of the site. The database includes a full bibliographic listing of the title and source of each author-date citation. It must be emphasized that this field does not provide a comprehensive list of references pertinent to the site described in the record.

24-32. **Values of the site (VALUES1 to VALUES9)** - The listed values in these nine fields are based on the important features of a site as identified by proponents of the site. Each values field consists of five elements that coincide with the five columns of Table 2 (value ranking, major subject area, specific subject area, type or function of area, and significance). The number of lines is arbitrarily limited to nine in any one record and each line is a separate field for search purposes. Values expressed by two or more words in the master list of values are abbreviated by entering only one key word in the database as listed in Table 6. It was assumed that most of the geological and biological terms used in the values framework (Table 2) are widely understood terms or, if they are not, definitions for them are available in published glossaries. However, some biological terms are rather subjective, as are certain words or phrases used in the human-use part of the values framework and in the column of Table 2 entitled 'type or function of area'. Without intending to be a complete glossary, Appendix 1 lists the definitions that were used. Users of the database are urged to note the precautionary comment at the beginning of Appendix 1. To increase efficiency of search time, values that appeared to be of primary importance to the proponent are listed in the first four of these fields (Fields 24, 25, 26 and 27). Therefore, a user interested only in the values judged to be of primary importance on a site, need only search Fields 24 to 27.

TABLE 6

Database abbreviations used to record values from Table 2 which involve phrases of two or more words

Value	Database abbreviation
alpine feature, alpine tundra community	ALPINE
ancient lakebed	LAKEBED
aquatic furbearer	AQUATIC
archaeological site	ARCHAEOLOGICAL
Arctic char	CHAR
bedrock feature	BEDROCK
boreal forest community	BOREAL
botanical/paleobotanical feature	BOTANIC
ceremonial site	CEREMONIAL
coastal community	COASTAL
depositional feature	DEPOSITIONAL
domestic harvest	HARVEST
drumlin/esker	DRUMLIN
ecological communities	COMMUNITIES
erosional feature	EROSIONAL
estuarine community	ESTUARY
forest-tundra transition community	TRANSITION
freshwater community	FRESHWATER
healing site, healing materials	HEALING
human use	HUMAN
industrial artifact or industrially-produced landform	INDUSTRIAL
invertebrates and amphibians	INVERTEBRATES
karst feature	KARST
kettle lake	KETTLE
marine community, marine feature or marine species	MARINE
other birds species, other fish species, or other mammal species	OTHER
other raptor species	RAPTOR
other waterfowl species	WATERFOWL
past use	PAST
patterned ground	PATTERNED
periglacial feature	PERIGLACIAL
permafrost feature	PERMAFROST
polynya community	POLYNYA
present use	PRESENT
rare, endangered or threatened species	RARE
relict grassland community	GRASSLAND
research/education	RESEARCH
riparian community	RIPARIAN
sacred site	SACRED
sand dune	DUNE
scenic viewing	SCENIC
seal and walrus	SEAL
sedimentary process	SEDIMENTARY
spiritual site	SPIRITUAL
subalpine feature	SUBALPINE
talus slope	TALUS
terrestrial furbearer	FURBEARER
trading site	TRADING
traditonal pursuit	TRADITIONAL
transportation feature	TRANSPORTATION
travel route	TRAVEL
trout and arctic char	TROUT
tundra community	TUNDRA
unglaciated feature	UNGLACIATED
volcanic feature	VOLCANIC
weathering and mass-wasting	WEATHERING
wetland community	WETLAND
wilderness appreciation	WILDERNESS
wind erosion and deposition	WIND
winter range	WINTER

4.3 Potential records that were excluded from the database

There were two primary reasons for omitting certain potential records from the database. The first reason related to features that are so numerous that it is probably preferable to record them in a separate, specialized database. Archaeological sites, of which there are hundreds in the Yukon, are already recorded in a database maintained by the Archaeological Survey of Canada. However, 36 important archaeological sites were included in the present database to demonstrate the values that would be recorded if the Yukon Protected Area Inventory were to include comprehensive records of archaeological sites.

The same approach was used for stream classification data by the Department of Fisheries and Oceans (1982) in which 'A' streams and 'B' streams are mapped to identify spawning and rearing areas, respectively, for salmonid species. The values represented by salmonid spawning and rearing streams are widely accepted as features deserving of protection but the inclusion of each such stream or lake in the database for the Yukon Protected Area Inventory would add an exceptionally large number of records to the database. As with archaeological sites, a small number of salmon spawning streams were included from NTS Map 116 B and 116 C (east half) in the Dawson area to demonstrate the nature of such records if they were eventually incorporated into the protected area database. Only 'A' streams for which a spawning symbol was shown on the maps prepared by Department of Fisheries and Oceans (1982) were included in the sample entries.

The other reason for omitting records from this phase of database compilation relates to systems of protected areas that are currently under review. Examples include potential key wildlife areas suggested at one time by the Yukon Wildlife Branch, as recorded in Appendix A of Theberge et al. (1980). Such areas, for which there is not presently Fish and Wildlife Branch endorsement or verification, are in locations geographically identified as: Mount Laporte Range; Glenlyon Range; Larsen Hot Spring Area; Central Richardson Mountains; Willow Hills

Extension; Pelly Mountains Extension; Nisling River Extension; Kluane North Extension; Kusawa Lake Extension; Bennett Lake Extension; and Sifton Range Extension. However a major inventory project that will clarify these areas and identify other key wildlife areas is being conducted by the Fish and Wildlife Branch starting in 1987. Compatibility of this inventory with protected areas inventory is a priority.

4.4 Records entered by name only, with other fields incomplete

Additional potential national historic sites, territorial parks and 'Yukon heritage sites' are the main categories for which 'name-only' records have been established in the database. For these categories, the time available for this study did not allow the details to be assembled for completion of the various information fields. Particularly for the many site-specific heritage sites, considerable work will be required after the present phase of the study to bring the human use records to a level of detail comparable to records entered for biophysical reasons.

For most systems, there are also some records for which details such as area (km^2) or overlaps with other proposed protected areas are not yet recorded in Fields 11 and 17. These time-consuming tasks had to be assigned a lower priority than the primary objective of developing and designing the database.

4.5 Summary of records in the database

Established and proposed protected areas entered into the database represent the various systems as summarized in Table 7. It is important to emphasize that many of the individual records represent areas that geographically overlap with other established or proposed areas.

TABLE 7

Summary of established and proposed areas recorded in preliminary database of Yukon Protected Area Inventory

	Number of areas Established	Proposed
International Systems:		
BIOSPHERE RESERVE	0	1
RAMSAR SITE	1	0
WORLD HERITAGE SITE	1	1
National Systems:		
ARCHAEOLOGICAL SITE	36	0
NATIONAL PARK	1	0
NATIONAL PARK RESERVE	1	1
NATIONAL MARINE PARK	0	0
NATIONAL HISTORIC PARK	0	0
NATIONAL HISTORIC SITE	7	0
NATIONAL WILDLIFE AREA	0	1
CANADA LANDMARK	0	0
CANADIAN HERITAGE RIVER	1	1
CANADIAN HERITAGE TRAIL	0	0
MIGRATORY BIRD SANCTUARY	0	5
Territorial (Yukon) Systems:		
GAME SANCTUARY	2	0
GAME PRESERVE	2	0
YUKON TERRITORIAL PARK	1	12
Systems Involving Joint Jurisdiction:		
CO-OPERATIVE HERITAGE AREA	0	0
INTERNATIONAL HISTORIC PARK	1	0
Other Kinds of Protected Areas Not Yet Formally Recognized as Systems:		
"ARCTIC INTERNATIONAL WILDLIFE RANGE"	0	1
"CARIBOU CONCENTRATION AREA"	0	9
"CRITICAL WILDLIFE AREA"	0	53
"ENVIRONMENTALLY SIGNIFICANT AREA"	4	41
"FOREST RESERVE"	0	3
"INTERNATIONAL BIOLOGICAL PROGRAMME SITE"	8	22
"KEY AREA FOR BIRDS"	0	10
"MIGRATORY BIRD HABITAT"	0	35
"NORTH AMERICAN WATERFOWL HABITAT AREA"	0	1
"NORTHERN YUKON LAZULITE DEPOSIT"	0	4
"SPAWNING AREA FOR SALMONIDS"	0	7
"WATERFOWL BREEDING AND STAGING WETLAND"	0	10
"WHITE WHALE SANCTUARY"	0	1
"YUKON HERITAGE SITE"	0	121

5. SUGGESTIONS FOR USE OF THE DATABASE

5.1 Distribution of the database and supporting software

From the several available alternatives for database management software, dBase III Plus was selected for use in the Yukon Protected Area Inventory because it has become an industry standard and remains as the most popular choice of database software, based on a survey of 300,000 users (Whyte 1986). If several agencies are expected to use the database developed during this phase of the work, consideration should be given to purchase of a network version of dBase III Plus.

Although Yukon resource inventories can be planned for use either on a mainframe computer or on personal computers, the long-term trend is probably towards the latter. Even if some existing Yukon inventory data are now part of a mainframe SAS database, such information can be down-loaded to a microcomputer database management system such as dBase III Plus. This predicted trend should not deter present users of mainframe SAS databases to load the Yukon protected area database onto the mainframe computer for analysis by mainframe SAS. Alternatively, if users familiar with SAS wish to continue using that software, the personal computer version, known as SAS SYSTEM, will read data from a dBASE III file.

5.2 Examples of search and sort options in the database

With dBase III Plus, searches can be done in two ways. The first is to write a program for a screen menu that directs the user to answer questions. A screen menu prepared during this study to demonstrate this first option is reproduced below:

YUKON PROTECTED AREA INVENTORY

What MAP area are you interested in: 105 D/2

Please give the other information by entering Y (yes) or N (no).

Are you looking for Established sites? ____
Proposed sites? ____

Do you want to list the significance rating by the proponent? Y
the comments recorded in the database? Y
the values identified as being of primary importance? ____

Print a hard-copy? Y

If the user specified an interest in map 105 D/2 and indicated 'Y' (yes) for hard copy of information recorded in the 'significance' field and the 'comments' field, as shown in the sample screen menu above, the following print-out would result.

```
                    YUKON PROTECTED AREA INVENTORY

005    IBP SITE   CARCROSS DUNES (1.3 KM2)
       Significance:
       Comments    : VEGETATION SUCCESSION FROM DUNE TO BOREAL FOREST

047    MIGRATORY BIRD HABITAT    BENNETT LAKE OUTLET (13 KM2)
       Significance: IMPORTANT
       Comments    : TRUMPETER SWAN AND DUCK SPRING STAGING AREA

220    YUKON HERITAGE SITE     CARCROSS ()
       Significance:
       Comments    :

222    YUKON HERITAGE SITE     VENUS MINE ()
       Significance:
       Comments    :

225    YUKON HERITAGE SITE     CARCROSS CEMETERY ()
       Significance:
       Comments    :
```

The ease of searching the database by programmed screen menus is counterbalanced by a lack of flexibility. It is difficult to anticipate the full range of questions, and the combinations of information from different fields, that will be of interest to future users of the database. Therefore, it is strongly recommended that users search the database by the second method available through dBase III Plus - and that is by direct keyboard commands that can address a great variety of very specific questions beyond those that might have been programmed into a screen menu.

Through keyboard commands it is possible, for example, to search the database with greater specificity and greater variation: by combining variables from different fields; by one map sheet or one ecoregion at a time; by grouping blocks of maps or several ecoregions together; and/or by areas of interest defined by 'less than' or 'greater than' specifications for latitude, longitude or area (km^2). The flexibility available is shown by the selected examples below. For each example, a hypothetical search question is listed, followed by the dBase III Plus keyboard command (in bold print) and the resulting print-out.

EXAMPLE 1. What protected area systems are now represented by **established** protected areas in the Ruby Range Ecoregion?

```
LIST NUMBER,NAME FOR LANDSTATUS = 'E' .AND. 'RUBY'$ECOREGION

Record #  Number   Name
     225     340   OTTER FALLS ARCHAEOLOGICAL SITE
     226     341   TAYE LAKE ARCHAEOLOGICAL SITE
     227     342   LITTLE ARM ARCHAEOLOGICAL SITE
     228     343   GLADSTONE ARCHAEOLOGICAL SITE
     229     344   CANYON CREEK ARCHAEOLOGICAL SITE
     230     345   OLD AISHIHIK VILLAGE ARCHAEOLOGICAL SITE
     252     346   CHIMI (AISHIHIK) ARCHAEOLOGICAL SITE
     306     384   KLUANE NORTH E.S.A.
     384     079   KLUANE WILDLIFE SANCTUARY
```

In this particular example, the Kluane North "Environmentally Significant Area" had been recorded as 'established' in the database record because much of this ESA falls within the Kluane Wildlife Sanctuary which is established. Similarly, the 36 archaeological sites recorded in the database were arbitrarily entered as 'established' rather than 'proposed', with the result that they were printed out for the database enquiry shown above.

EXAMPLE 2. What protected area systems have been **proposed** but are not yet established in the Ruby Range Ecoregion?

```
LIST NUMBER,NAME FOR LANDSTATUS = 'P' .AND. 'RUBY'$ECOREGION

Record #  Number   Name
       1     001   AISHIHIK LAKE IBP SITE
       9     009   DUKE MEADOW IBP SITE
      27     050   TAYE LAKE MIGRATORY BIRD HABITAT
      29     052   KLOO-SULPHUR LAKES MIGRATORY BIRD HABITAT
      36     053   KLUANE LAKE OUTLET MIGRATORY BIRD HABITAT
      37     054   LAKE CREEK COMPLEX MIGRATORY BIRD HABITAT
      38     055   PICKHANDLE LAKE MIGRATORY BIRD HABITAT
      39     056   AISHIHIK LAKE OUTLET MIGRATORY BIRD HABITAT
     196     196   BURWASH CRITICAL WILDLIFE AREA
     197     197   CLEAR CREEK CRITICAL WILDLIFE AREA
     239     019   MOUNT ARCHIBALD - DECOELI AREA, ST. ELIAS RANGE IBP
                   SITE
     240     015   KOIDERN RIVER AREA, ST. ELIAS RANGE IBP SITE
     247     026   SHEEP MOUNTAIN - MOUNT WALLACE, ST. ELIAS RANGE IBP
                   SITE
     284     130   AISHIHIK LAKE E.S.A.
     307     385   AISHIHIK LAKE NORTHERN EXTENSION E.S.A.
     310     388   MOUNT CAIRNES E.S.A.
     318     396   SIFTON RANGE E.S.A.
```

EXAMPLE 3. Within the Lake Laberge Ecoregion, what are the "purposes" that proponents had in mind for established or proposed protected areas for which human use is the primary value.

```
LIST PURPOSE FOR ECOREGION = 'LAKE LABERGE' .AND. 'HUMAN' $VALUES1

Record # Purpose
      30 COMMEMORATES PLACE AND EVENT OF NATIONAL HISTORIC SIGNIFICANCE
     215 PROTECTION OF EXPOSED HEARTH FEATURE
     216 PROTECTION OF BURIED PREHISTORIC REMAINS
     217 PROTECTION OF LATE PREHISTORIC HEARTH AND OCCUPATION SITE
     218 PROTECTION OF PREHISTORIC HUNTING CAMP AND HEARTH SITE
     220 PROTECTION OF CAMPSITE AND ARTIFACTS
```

To limit the length of print-out for this sample question, the keyboard command limited the search to only those records where human use values were listed in the first of nine possible values fields (Values1). The search could have been expanded to include records where human use was recorded in a values field other than the first one.

EXAMPLE 4. List the area number and site name of any established or proposed protected areas that overlap on Map 105 D/2.

```
LIST NUMBER,NAME FOR '105 D/2' $MAP .AND. 'MULTIPLE' $OVERLAP

Record # Number   Name
    286    132    BENNETT LAKE - CARCROSS DUNES - TAGISH LAKE EXTENSION
                  E.S.A.
    315    392    BENNETT LAKE - CARCROSS DUNES - TAGISH LAKE E.S.A.
    394    090    MILLHAVEN BAY YUKON TERRITORIAL PARK
```

EXAMPLE 5. On maps 115 H and 115 A what are the area numbers and site names of protected areas in which habitation (present or past) was listed as a value by proponents of protected areas?

```
LIST NUMBER,NAME FOR ('115 A' $MAP .OR. '115 H' $MAP) .AND.
'HABITATION' $VALUES3

Record #  Number   Name
    226     341    TAYE CREEK ARCHAEOLOGICAL SITE
    229     344    CANYON CREEK ARCHAEOLOGICAL SITE
```

As in Example 3, this search was arbitrarily limited by specifying that only the third line (Values3) of the nine possible values fields was searched for the word 'habitation'. Any or all of the values fields could have been specified for search of the values word 'habitation'.

EXAMPLE 6. List the area number, land status (established or proposed) and the site name for protected areas that lie south of 61° N and west of 138° W.

```
LIST NUMBER,LANDSTATUS, NAME FOR LATITUDE <'61 00 00'
.AND. LONGITUDE >'138 00 00'

Record          Land
  #     Number status  Name
   35   033      E     KLUANE NATIONAL PARK RESERVE
  195   195      P     KASKAWULSH CRITICAL WILDLIFE AREA
  196   196      P     BURWASH CRITICAL WILDLIFE AREA
  224   339      E     AIRDROP LAKE-HOODOO MOUNTAIN ARCHAEOLOGICAL SITE
  234   013      P     KASKAWULSH GLACIER AREA, ST. ELIAS RANGE IBP SITE
  235   014      P     KLUTLAN GLACIER AREA, ST. ELIAS RANGE IBP SITE
  236   016      P     LOWELL GLACIER AREA, ST. ELIAS RANGE IBP SITE
  272   031      E     KLUANE NATIONAL PARK RESERVE
  306   384      E     KLUANE NORTH E.S.A.
  309   387      E     KLUANE NATIONAL PARK E.S.A.
  310   388      P     MOUNT CAIRNES E.S.A.
  384   079      E     KLUANE WILDLIFE SANCTUARY
```

If these examples and the database descriptions provided in Section 4.2 are inadequate for users of the database, additional information could be provided in a descriptive manual or by a workshop in Whitehorse to demonstrate the steps for amending, adding or deleting records, and for searching the database. Such steps would not be a substitute for one or more Whitehorse-based users to be familiar with dBase III Plus and its capabilities. The division within the Department of Renewable Resources that is to be assigned responsibility for maintenance of the database should ensure that an operator is available at the conclusion of this study to work directly with the database through use of dBase III Plus keyboard commands.

5.3 Limitations to use of the database

Use of the database will be limited by three main factors: accuracy and completeness of records in the database; access to hardware and software with the capacity to use the search and sort features of the selected database management system (dBase III Plus); and the imaginativeness of the database user in designing search options and procedures to screen the data. The first of these potential limitations is addressed with the recommendations in Sections 7.1 and 7.2. The second was discussed briefly in Section 5.1. The third potential limitation - inventiveness of the database user - is addressed by presentation of several examples of search and sort options (Section 5.2) and by some suggestions about screening criteria (Section 6) which may increase the interests of potential users to become familiar with the database and supporting software as quickly as possible.

Design of the database is not specifically discussed here as a potential limitation to its use, but it should be pointed out that the desire of several members of the working groups for the database to be readily usable and for the print-out to be free of decoding steps did result in some features that are less streamlined than they could have been. If the database had been designed solely for interactive use between the computer screen and user and for maximum efficiency of storage space and

search/sort time, much greater use of coding and abbreviations would have been used and the storage space dedicated to each field could have been correspondingly reduced. The latter goal was compromised because of requests from several working group members to have access to a print-out on which the headings and data in fields of the database are self-explanatory, with minimum use of coding and abbreviations. The result is the format shown in Table 5.

If future users wish to have the opportunity to complement each record with descriptive notes or text of greater length than presently possible in the 'COMMENTS' field, a 'MEMO' field can be used at the end of each dBASE III record. A limitation of the 'MEMO' field is that it cannot be used for sorting or indexing and it has a 4,000-character limit. This size limit of the dBASE III 'MEMO' field is actually a limitation of the dBASE III Word Processor. Therefore, if one were to use other word processor software to record information in the 'MEMO' field, the only limitation is diskette or hard disk capacity (Simpson 1985).

6. SOME SUGGESTED APPROACHES FOR SCREENING THE VALUES LISTED IN THE VALUES FRAMEWORK

6.1 Screening the categories in the values framework

Section 5.2 provided some examples of how records can be sorted, either by answering questions on screen menus or by keyboard entry of specific dBase III Plus commands. A more challenging task is the design of a system for screening the values recorded in the Yukon Protected Area Inventory. To encourage debate on this question it is necessary to first examine the goal of screening.

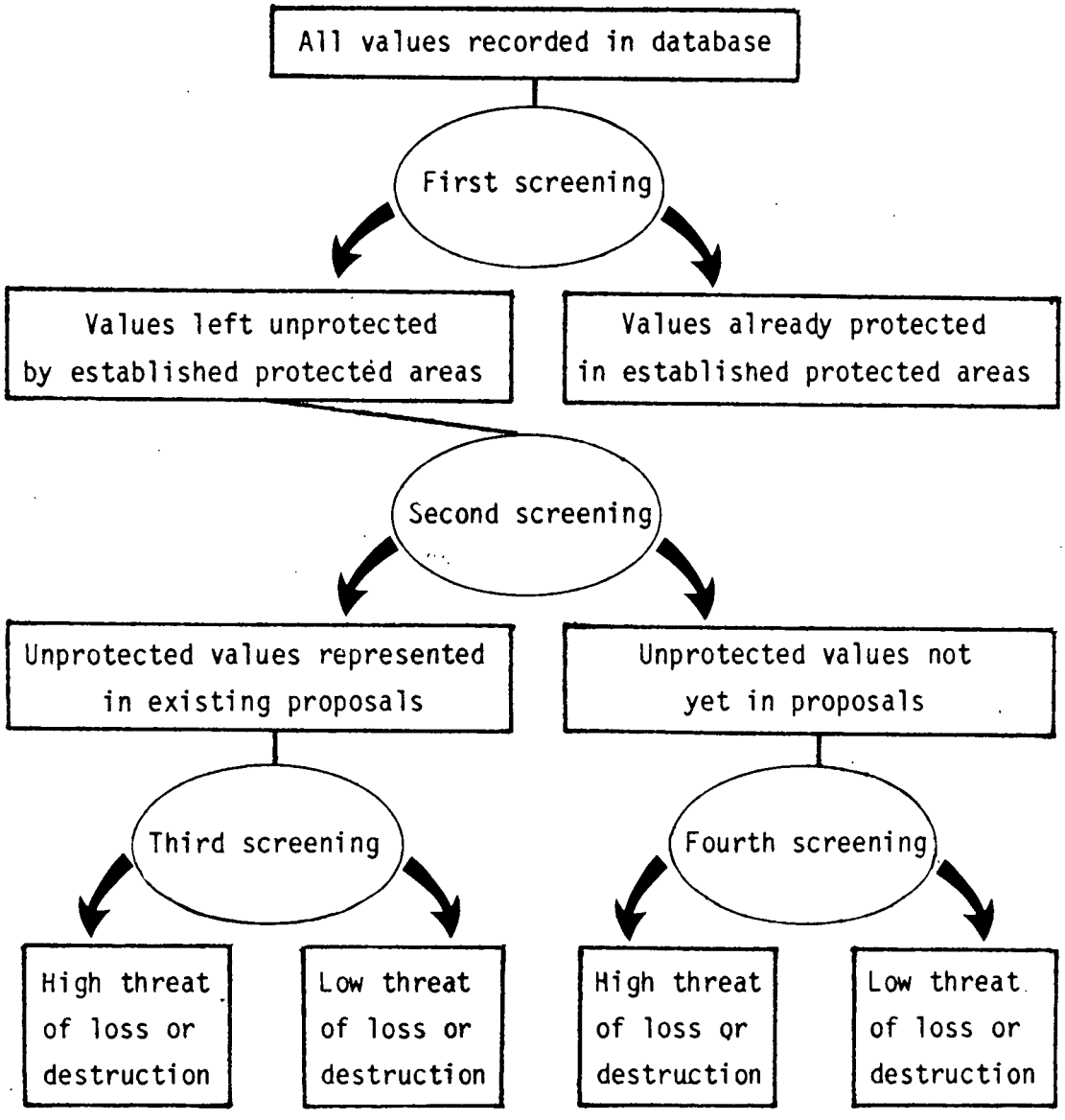
A starting assumption is that all values listed in the values framework (Table 2) are of equal value. Therefore screening cannot lead to a conclusion that falcons are more or less important than a structure that is treasured because of its heritage value. The prime function of the values framework is to define what Yukoners know to be present in the Yukon and consider to be worthy of protection. From this opening assumption, it is evident that it is not the primary goal of a screening process to generate lists of values that are to be maintained and others that are to be foregone. The goal instead is to produce lists that suggest courses of action that will, collectively, ensure that all values in the framework are ultimately represented in the Yukon's total protected area system. An example of steps that could be used to screen values recorded in the database is given in Figure 3. Screening according to the steps outlined in Figure 3 could be done for one protected area system at a time or collectively for all protected area systems in the Yukon, depending upon the interests of those doing the screening.

The screening steps shown in Figure 3 could be translated into courses of action if the result of each screening were viewed in terms of highest and lowest priorities, as summarized below:

FIRST SCREENING - List all values represented in currently established protected areas and plan a course of action that places highest priority on steps to protect the currently unprotected values and lowest priority on values already represented in established protected areas;

FIGURE 3

Potential screening criteria for values
in Yukon Protected Area Inventory



SECOND SCREENING - For the unprotected values, set highest priority on values already in proposals and lowest priority on those that are not yet in proposals;

THIRD SCREENING - For the proposed but unprotected values, set highest priority on values that are in danger of loss or destruction and lowest priority on those that are not in obvious danger; and

FOURTH SCREENING - For the residual values (unprotected and unproposed), set highest priority on values that are in danger of loss or destruction and lowest priority on those that are not in obvious danger.

In summary, for the screenings that focus on values, suggested criteria are: present level of protection; level of interest (proposed versus unproposed); and perceived level of threat. It is important to reiterate that these suggested screenings are focussing on values or sets of values, not on geographical areas.

The initial focus on selection criteria and screening steps based on values, rather than site-specific areas, was deliberate and was a result of suggestions made at meetings of the working groups. There are already abundant review articles on selection criteria for protected areas, two of the most recent of which are the ones prepared by the Canadian Council on Ecological Areas (1986) and for the Northwest Territories (Peterson et al. 1986). Several additional papers on this subject are reproduced in Appendix 2. Because of these recent comprehensive reviews, there was little need to repeat this step for the present Yukon study. It must be emphasized, however, that selection criteria that relate to geographic areas, and not just to values in the overall values framework (Table 2), will be the next step after the preliminary screenings suggested in Figure 3. This next required level of screening can be portrayed by using 'representativeness' as an example because it is a commonly used selection criterion in protected area systems planning.

For the sake of this example, one could assume that an objective of an overall protected area system plan in the Yukon is to ensure that the main physiographic subdivisions of the territory are represented somewhere in the total system of protected area. For example, planners could begin with the premise that there are distinct biophysical differences between each of the 22 Yukon ecoregions described by Oswald and Senyk (1977). From this premise, it could be argued that the biophysical diversity of the Yukon would not be represented in a protected area system unless there were at least one established protected area in each of the 22 ecoregions. This suggested minimum requirement is based on the concept of representativeness and it should not be confused with the fact that there could be dozens of site-specific areas within any one ecoregion that, for reasons of uniqueness, should be part of a comprehensive system of protected areas but which, because of their small size and site-specific location, would never contribute to the land area representative of a given ecoregion.

A second assumption for the point being made is that, in any one ecoregion, the full range of biophysical diversity cannot be captured unless the candidate protected area is large enough to include: a range of altitudes from valley bottom to upland summit; and the biophysical contrasts represented by north-facing and south-facing slopes. Importance of the latter variable is not the same in every Yukon ecoregion but, in general, the Yukon is an area in which north slope - south slope contrasts in incident solar radiation (hence differences in biological diversity and biological productivity) are profound in comparison with most other regions in North America.

A limited sampling of several 1:250,000 Yukon topographic maps during this study indicated that, except in very steep terrain, a linear distance of about 15 km, on average, is required for a transect from valley bottom to upland summit in the Yukon's ecoregions. In most of the Yukon's mountainous terrain, to capture the biophysical contrasts of north-facing and south-facing slopes a linear transect of 15-km length would, on average, have to be widened perpendicularly at least 15 km.

The result is an arbitrarily defined square of about 15 km by 15 km, or 225 km^2. To ensure that each area representative of an ecoregion also contained a segment of river channel and one or more lakes representative of the ecoregion, the minimum area to capture the representativeness of any one ecoregion would in many cases need to be larger than 225 km^2. For the point under discussion here, a minimum area of 250 km^2 is arbitrarily suggested.

A search of the database for **established** protected areas that exceed 250 km^2 in each of Yukon's 22 ecoregions would provide a general indication of how well the Yukon's 22 ecoregions were currently represented. The keyboard command for a listing of the ecoregion name, site name and area of each established protected area that is larger than 250 km^2 is:

```
LIST ECOREGION,NAME,AREA FOR LANDSTATUS = 'E' .AND. AREA > '250'
```

The result of such a selective search is shown in Table 8. The same instruction can be given for **proposed** areas, resulting in the list shown in Table 9. This example demonstrates one way that the database can be used to incorporate the concept of representativeness into a protected area system plan. Such analyses could be conducted by individual agencies interested in only one protected area system or by planning commissions interested in the collective significance of all systems of protected areas, whether established or proposed. This example is one of many uses of the database that can be of considerable assistance in the development of a system plan for Yukon protected areas. The example chosen happened to focus on 'representativeness' as a selection criterion; an inquisitive user of the database could do similar screenings using other selection criteria.

TABLE 8

LIST OF ESTABLISHED PROTECTED AREAS THAT EXCEED 250 KM^2 IN EACH ECOREGION OF THE YUKON

ECOREGION	PROPOSED PROTECTED AREA	AREA KM^2
1. Beaver River; 2. Liard River; 3. Logan Mountains; 4. Pelly Mountains; 5. Lake Laberge; 9. Wellesley Lake; 10. Dawson Range; 11. Klondike River; 12. Pelly River; 13. Mayo Lake - Ross River; 14. Itsi Range; 15. Wernecke Mountains; 16. South Ogilvie Mountains; 17. North Ogilvie Mountains; 18. Eagle Plain; 20. Berry Creek	- not represented by areas over 250 km^2	
6. Coast Mountains	- Dalton Post E.S.A.	622
7. St. Elias Mountains	- Kluane National Park Reserve	22,000
	- Kluane North E.S.A.	5,440
	- Kluane National Park E.S.A.	22,015
8. Ruby Range	- Kluane North E.S.A.	5,440
19. Peel River	- Peel River Game Preserve	4,847
21. Old Crow Basin	- Old Crow Flats Ramsar Site	6,170
	- Northern Yukon National Park	10,000
22. Northern Mountains and Coastal Plain	- Northern Yukon National Park	10,000

6.2 Future directions for selection criteria of Yukon protected areas

The statement of work for this project anticipated that, after development of a protected area inventory, the consultants would develop selection criteria to screen and evaluate the inventory of protected area proposals and then apply the selected selection criteria to some case studies representative of present protected area proposals. Draft criteria that could be considered for setting priorities amongst several candidate protected areas within one system were presented at the second meeting of the Technical Working Group but the subject was not pursued. The main concern was that the use of selection criteria in the setting of priorities to candidate protected areas within any one system was, firstly, the responsibility of agencies administering those systems and not the responsibility of consultants. Secondly, it was suggested that it was premature to proceed with the application of selection criteria to candidate protected areas because at present in the Yukon there were several other related processes underway or about to begin. These include not only direct conservation initiatives by Yukon's Minister of Renewable Resources, but also steps to articulate a protected area systems policy as part of an overall renewable resources strategy,

TABLE 9

LIST OF PROPOSED PROTECTED AREAS THAT EXCEED 250 KM^2 IN EACH ECOREGION OF THE YUKON

ECOREGION	PROPOSED PROTECTED AREA	AREA KM^2
1. Beaver River;	- Upper Whitefish River Migratory Bird Habitat	440
	- Toobally Lakes Migratory Bird Habitat	3,630
	- Coal River Springs E.S.A.	800
2. Liard River;	- Toobally Lakes Migratory Bird Habitat	3,630
	- Dodo Lakes Migratory Bird Habitat	520
	- Frances Lake Migratory Bird Habitat	285
	- Coal River Springs E.S.A.	800
3. Logan Mountains;	- not represented by areas over 250 km^2	
4. Pelly Mountains;	- Wolf Lake IBP Site	5,180
	- Pelly Mountains E.S.A.	285
	- Wolf Lake E.S.A.	5,180
5. Lake Laberge;	- Lower Nisutlin River Migratory Bird Habitat	388
	- Wolf Lake IBP Site	5,180
	- Bennett Lake/Carcross Dunes/Tagish Lake E.S.A.	1,810
	- Wolf Lake E.S.A.	5,180
	- Sifton Range E.S.A.	2,180
	- Streak Mountain E.S.A.	3,780
6. Coast Mountains	- Bennett Lake/Carcross Dunes/Tagish Lake E.S.A.	1,810
7. St. Elias Mountains	- Klutlan Glacier Area, St. Elias Range IBP Site	3,890
	- Lowell Glacier Area, St. Elias Range IBP Site	490
	- Mt. Archibald/Decoeli Area, St. Elias Range IBP Site	440
	- Mt. Cairnes E.S.A.	600
8. Ruby Range	- Aishihik Lake IBP Site	1,040
	- Mt. Archibald/Decoeli Area, St. Elias Range IBP Site	440
	- Sheep Mountain/Mt. Wallace, St. Elias Range IBP Site	360
	- Mt. Cairnes E.S.A.	600
	- Sifton Range E.S.A.	2,180
9. Wellesley Lake;	- Wellesley Lake Migratory Bird Habitat	440
	- Upper Snake River E.S.A.	1,170
	- Nisling River E.S.A.	648
10. Dawson Range;	- Nisling River E.S.A.	648
	- Sifton Range E.S.A.	2,180
11. Klondike River;	- Southern Ogilvies IBP Site	440
	- Dempster Highway E.S.A.	2,590
	- Southern Ogilvies E.S.A.	2,930
12. Pelly River;	- Mayo Swampland IBP Site	260
	- McArthur Range IBP Site	1,620
	- Mayo Swampland E.S.A.	260
	- Rusty Lake Forest Reserve	540
13. Mayo Lake - Ross River;	- Sheldon Lake Migratory Bird Habitat	3,000
	- Mayo Swampland IBP Site	260
14. Itsi Range;	- Cirque Lake IBP Site	980
	- MacMillan Pass E.S.A.	984
15. Wernecke Mountains;	- Snake River IBP Site	1,730
	- Wernecke Mountains IBP Site	960
	- Upper Snake River E.S.A.	1,170
	- Wernecke Mountains E.S.A.	1,040

... Continued

TABLE 9 (continued)

LIST OF PROPOSED PROTECTED AREAS THAT EXCEED 250 KM^2 IN EACH ECOREGION OF THE YUKON

ECOREGION	PROPOSED PROTECTED AREA	AREA KM^2
16. S. Ogilvie Mountains;	- Chapman Lake Region IBP Site	490
	- Sheep Mountain Area, Ogilvie Mountains IBP Site	980
	- Tombstone Mountain IBP Site	340
	- Dempster Highway E.S.A.	2,590
	- Southern Ogilvies E.S.A.	2,930
	- Southwest Dempster E.S.A.	2,074
	- Wernecke Mountains E.S.A.	1,040
17. N. Ogilvie Mountains;	- Chapman Lake Region IBP Site	490
	- Fishing Branch River IBP Site	1,220
	- Southern Ogilvies IBP Site	440
	- Sheep Mountain Area, Ogilvie Mountains IBP Site	980
	- Bear Cave Mountain E.S.A.	4,920
	- Dempster Highway E.S.A.	2,590
	- Southern Ogilvies E.S.A.	2,930
	- Southwest Dempster E.S.A.	2,074
18. Eagle Plain;	- Whitefish Lake Complex Migratory Bird Habitat	1,810
	- Fishing Branch River IBP Site	1,220
	- Bear Cave Mountain E.S.A.	4,920
	- Northeast Dempster E.S.A.	842
	- Dempster Highway E.S.A.	2,590
	- Northern Yukon E.S.A.	39,700
	- Arctic Circle Crossing Yukon Territorial Park	842
19. Peel River	- Peel/Caribou River Complex Migratory Bird Habitat	1,550
	- Peel River Game Reserve E.S.A.	4,850
20. Berry Creek	- Whitefish Lake Complex Migratory Bird Habitat	1,810
	- Old Crow Basin IBP Site	12,950
	- Arctic International Wildlife Range	72,840
	- Dempster Highway E.S.A.	2,590
	- Northern Yukon E.S.A.	39,700
21. Old Crow Basin	- Old Crow Flats Migratory Bird Sanctuary	6,170
	- Old Crow Flats Migratory Bird Habitat	6,990
	- Old Crow Basin IBP Site	12,950
	- Arctic International Wildlife Range	72,840
	- Northern Yukon E.S.A.	39,700
22. Northern Mountains and Coastal Plain	- North Slope Migratory Bird Habitat	6,990
	- Firth River IBP Site	5,960
	- Arctic International Wildlife Range	72,840
	- Northern Yukon Peel River Extension E.S.A.	3,900
	- Northeast Dempster E.S.A.	842
	- Northern Yukon E.S.A.	39,700
	- Arctic Circle Crossing Yukon Territorial Park	842

together with the economic development planning process (Yukon 2000: Economic Development Strategy) and related renewable resources work by the Yukon Legislative Assembly, Select Committee of the Legislature.

Selection criteria that were suggested for discussion purposes in the Technical Working Group are summarized below. They are included here only to encourage further debate of this subject as the Yukon moves towards the next phase of developing a protected area systems policy and a conservation strategy.

The Task Force on Northern Conservation examined the selection criteria proposed for protected areas in a wide variety of jurisdictions and narrowed the potentially large list of criteria to the seven listed below:

Selection Criteria for Protected Areas

In order to qualify for consideration as protected areas, land and/or waters would have to satisfy one or more of the following criteria:

i) contain sites of significant cultural, archaeological, historic or traditional resource-gathering value;

ii) contain examples at specific sites of outstanding or unique landforms or geological features such as the pingos of the western Arctic;

iii) contain habitat essential for the survival of a significant portion of a migratory bird, terrestrial or marine mammal, or marine or freshwater fish population;

iv) contain outstanding examples of representative land or seascapes;

v) contain sites necessary for the preservation of genetic diversity;

vi) contain habitat essential for the preservation and enhancement of rare and endangered species; and/or

vii) contain outstanding areas for public recreation and tourism (Task Force on Northern Conservation 1984).

To maintain a similar level of generalization for criteria that refer specifically to the Yukon, phrases such as the following could be considered as supplementary to those put forward by the Task Force on Northern Conservation:

- cultural or biophysical features **unique to the Yukon**;
- Yukon habitats that are essential for the maintenance of **rare, threatened or endangered species of plants or animals**;
- Yukon habitats that are essential for the maintenance of species for which there are **international treaty obligations**;
- Yukon habitats that are required to ensure that the Yukon's **cultural and biophysical diversity is represented** in the overall system of protected areas.

Yukon residents also have the opportunity, if they wish, to develop more specific selection criteria that could focus, for example, on particular cultural, hydrological or botanical features. The details of such criteria were not debated in meetings of the working groups, but rather it was accepted that they would be developed within the context of a system of protected areas for the Yukon, and that the values framework would act as a guide for development of criteria.

7. CONCLUSIONS AND RECOMMENDATIONS FOR FOLLOW-UP WORK

Renewable resource management and the links between conservation and sustainable development are subjects for which consensus-building is inseparable from policy formulation and articulation of strategies and courses of action. For this reason, the decision to involve Yukon residents from governmental and non-governmental organizations to directly advise the consultants is a step that is strongly recommended for future work of this kind. The dynamic interchange that resulted from participation of Yukon residents in a Technical Working Group and Public Working Group led to significant changes to the original work objectives, as outlined in Section 1.1.

The following recommendations for follow-up work focus on steps that are logical extensions of the main accomplishment of this study which was development of a values framework and database for established and proposed protected areas in the Yukon.

7.1 Review and assessment of records now in the database

A process of verification, validation, screening and evaluation of records in the database should take place in the context of development of Yukon protected area systems work. The initial priority is for agencies or public interest groups with specialized interests in one or more of the protected area systems to initiate the steps recommended below:

It is recommended that records placed into the database by the consultants be reviewed, confirmed or modified by specialists most familiar with a given system of protected areas. It is also recommended that, concurrently with the step above, specialists familiar with a given system should confirm whether all of the candidate areas entered into the database for their system of interest still possess sufficient priority, within the system, to remain as candidate sites. This early work should include additional attention to several important fields not yet completed, especially those dealing with land status and overlapping protected area proposals.

7.2 Additions to the database

Throughout the project, members of the working groups were asked to provide entries for the database but this work is not complete because of various on-going programs and evaluations.

It is recommended that, in addition to the government agencies that were represented on the Technical Working Group, the following organizations be invited in 1987 to continue to provide additional entries to the database:

Yukon Fish and Game Association
Yukon Conservation Society
Yukon Historical and Museums Association
D.U. Canada
Yukon Canoe and Kayak Club
Heritage North Inc.
Yukon Wilderness Guides Association
Council for Yukon Indians

It is also recommended that updates to the database be formally scheduled to occur at regular 6-month intervals and that the division responsible for maintenance of the database within the Department of Renewable Resources take steps to ensure that governmental and non-governmental interests have an opportunity to provide data in time for entry into the database on the scheduled amendment dates.

7.3 Maps to support the database

The database contains a searchable field to indicate that a given protected area overlaps with other established or proposed protected areas, although this information is not yet entered for many of the records because the accurate identification of all overlaps is a relatively large task. In the field entitled OVERLAP, the presence of other established or nominated sites in the same location is indicated by the word MULTIPLE, followed by the record numbers for those areas involved in the overlap. This information is necessary but, by itself, has limited use because the data provided in this field are not able to answer the following questions without reference to maps:

- is it a partial overlap of two adjacent proposed sites?
- is one proposed site contained totally within the boundaries of another proposed site?
- is the apparent overlap simply a result of one area with precisely defined boundaries existing as several distinct records in the database because it has been proposed as a candidate area by several different proponents under several different systems?
- are there more than two systems involved in the overlap?

Such questions can only be answered by looking at the mapped boundaries of protected areas that the database has identified as overlaps. The Technical Working Group asked the consultants to assemble a separate file of maps that would show the locations and boundaries of established and proposed protected areas recorded in the database. A separate portfolio of photocopied maps was submitted to the Department of Renewable Resources, Whitehorse. There are, however, limitations to use of a collection of maps at different scales, levels of detail and date of preparation. A preferable goal is to plan for the development of a geographic information system that would provide greater versatility and overview capability than is possible with a collection of individual maps.

It is recommended that data entry for digitized recording of boundaries of protected areas in a computer-based geographic information system is the most effective way to increase the usefulness of the protected area database for land-use planning and protected area systems planning.

7.4 Follow-up studies to improve human use records in the database

One of the unique features of this project was the integration of cultural values with natural environment values. This complementary feature sets this project apart from other database inventories. Since much of the cultural information is not contained in reports, there are only a few records in the database for culturally significant areas. Neither the consultants nor organizations interested in cultural heritage values had the time or resources to undertake detailed research in this area during preparation of the database.

It is recommended that a follow-up project be funded by the Government of Yukon, specifically to prepare information on potential protected areas of cultural significance for inclusion in the database. This could be undertaken initially as a pilot project and the project should be selected jointly by the bands and the sponsoring agencies. The project should be jointly managed by the sponsoring agencies, the Council for Yukon Indians and the bands. Such a project must be co-ordinated with existing work of the Yukon Heritage Inventory.

7.5 Implementation of a screening procedure for protected areas in the database

Once the database has been reviewed and validated by the various agencies and organizations, the next step is to evaluate the records. One part of this evaluation would be to screen the values in the comprehensive framework of values to assess their representation in established or proposed protected areas.

It is recommended that the screening process, based on suggestions outlined in Section 6, be conducted by the agencies involved in planning and development of protected areas in the Yukon.

For example, the process suggested above could be undertaken as a component of the Yukon Territorial Parks System Plan currently being developed by the Department of Renewable Resources. Within such a program it may be useful to have the input of a broadly-based working group to assist in the evaluation process.

7.6 Maintenance of Technical Working Group and Public Working Group

Members of both the Public Working Group and Technical Working Group spent considerable time and effort reading and actively discussing the protected area concept and in development of a values framework for a Yukon protected area system. This is a valuable investment in time and understanding that the Government of Yukon could maintain and utilize for follow-up projects.

It is recommended that the Public Working Group and Technical Working Group established for this project be maintained to provide interactive exchange on further development of protected areas in the Yukon.

7.7 Integration with other Yukon resource inventories

At the joint meeting of the two working groups in December 1986, the Department of Renewable Resources made a commitment to take responsibility for maintenance and updating of the Yukon Protected Area Inventory. This commitment is particularly important because the

activity would be located in a part of the Department of Renewable Resources that is already involved with resource inventory databases.

It is recommended that early attention be given to software requirements and database design that would allow full computer integration between the Yukon Protected Area Inventory and other resource inventories now underway.

7.8 Implementation steps for a Yukon Conservation Strategy

This study showed that complex questions can be addressed to good effect by the joint involvement of consultants, governmental technical advisory groups and non-governmental public interest groups. A similar approach should be considered as the Yukon moves to the next phase in development of a Yukon Conservation Strategy. Involvement of a public working group is particularly important because it helps to overcome the impasse that frequently arises when government agencies appear to be unwilling to act until their homework is done. The latter circumstance will always be present to some degree, but the challenge is to clearly define, with public involvement, the implementation steps needed for development of a Yukon Conservation Strategy, without waiting for the details of system plans that may be under long-term development in specific federal or territorial agencies. It is assumed that a draft Yukon Conservation Strategy will be prepared to match the Yukon 2000 schedule and that the strategy will focus on the sustainable development theme.

It is recommended that an important step towards a Yukon Conservation Strategy would be to focus directly on the co-ordinated development of various protected area system plans designed for the eventual protection of all values in the comprehensive framework of values.

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APPENDIX 1

Definitions adopted for records in the Yukon Protected Area Inventory for terms that could be defined in various ways

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Definitions adopted for records in the Yukon Protected Area Inventory for terms that could be defined in various ways

It must be emphasized that many subjective terms are used in this database. The records contain many words that can have different meanings to different readers. The definitions recorded below are important for this inventory because they encourage the entry of data in a relatively consistent way. The definitions are, however, arbitrary and they can only lessen, not eliminate, the subjectivity involved.

There were two main sources for these definitions. Those pertaining to cultural features were drafted by two members of the Public Working Group, Lori Jackson and Linda Johnson. The remainder of the terms, dealing mainly with biological concepts, were adapted from a protected area report prepared for the Northwest Territories (Peterson et al., 1986). The definitions recorded here were not reviewed by the working groups or by other cultural heritage or biological specialists.

Words such as 'representative' or 'unique' are amongst the most subjective terms in the list below. Although definitions are offered, users of this database are cautioned that for these two terms the suggested definitions were not rigidly adhered to. In most cases where 'representative' or 'unique' appear in the records it is because the proponent used those words. A result, particularly for the word 'unique', is that it may sometimes refer to a feature that occurs only at one location in, for example, southern Yukon, sometimes to features that occur at only one location in all of the Yukon, and sometimes to features unique on a national or international scale.

Archaeological Site - Any site or area that contains sub-surface artifacts or structural evidence of past human activity.

Ceremonial Site - A structure, site or area associated with reverence, ritual, religious, or commemorative activities.

Collecting - For purposes of records in this database, a form of domestic harvest involving non-biological items such as minerals, rocks or other geological materials used for non-commercial purposes.

Concentration - Any site that is characterized by an unusually high density of a species in a given area.

Diverse - Any site chosen because it is richer in species composition or more variable in habitats or geomorphic types than a typical (representative) area.

Domestic Harvest - Any site or area utilized for hunting large and/or small game, trapping or fishing for domestic consumption, as opposed to commercial or recreational hunting, trapping or fishing (see also **Collecting** and **Gathering**).

Gathering - For purposes of records in this database, a form of domestic harvest involving the gathering of roots, berries, leaves and other botanical materials but excluding harvests from hunting, trapping and fishing.

Habitation - A structure, site or area used as a residence for short or long periods and on single or repeated occasions.

Healing Site - Any structure, site or area utilized for purification, cleansing, or for treating illnesses.

Human Use - Any area that has been utilized for any aspect of human activity including aboriginal and Euro-American and combined uses.

Industrial - Any structure, site, or area associated with commercial resource extraction, manufacturing, equipment storage and maintenance, or mass distribution activities.

Migration - Any site that is considered to be important to fish, birds or mammals moving between seasonal ranges.

Past Use - Any activity or use that had been concluded at the time of data input, regardless of date of first or last use, or identity and origin of users.

Population - Any site that is regularly used by animal species of high public interest, even if high-density populations are not involved.

Present Use - Any activity or use that is ongoing at the time of data input, regardless of date of initiation or inception, including proposed future uses mentioned in planning studies or land claims documents; this phrase includes items that would have been defined by "future use", a term that was eliminated after discussion at the December 1986 joint meeting of working groups.

Production - Any site in which animals are produced and/or raised, whether it involves nesting of birds, spawning of fish, calving of ungulates, seals and whales, or denning of bears.

Productive - Any site that possesses high primary (plant) productivity and/or high secondary (animal) productivity.

Recreation - Any structure, site or area utilized for some pleasant occupation, pastime or amusement.

Research/Education - Any structure, site or area pertaining to an investigation or exchange of information in the careful study of a subject. Research can refer to the value of past research at a site or the unutilized research potential of a site. An educational function was assumed to be inseparable from a research function.

Sacred Site - Any structure, site or area set apart for or dedicated to some religious purpose, and hence entitled to veneration or religious respect.

Scenic Viewing - Any structure, site, natural feature or vista that is valued primarily for its aesthetic or unique qualities, including areas that combine natural features with built features or cultural associations (i.e. with significant events or beliefs).

Representative - Any site chosen because it is typical.

Spiritual Site - Any structure, site or area utilized for rituals that are concerned with spirits, divine or supernatural beings.

Structure - Any structure, site or area for which the key value of interest involves a human-constructed feature.

Trading Site - Any structure, site or area utilized for commodity exchange or commercial activities.

Traditional Pursuit - Any structure, site or area other than habitation sites, hunting, trapping or fishing sites where other cultural activities may have taken place such as, places where skins were tanned, where meat- or fish-drying racks were located, sites where Indian Days are celebrated, and sites used for outings or activities designed to renew cultural ties.

Transportation Feature - Any structure, site or area associated with the commercial movement of goods, people or services.

Travel Route - A trail, road, water, or air route used repeatedly by aboriginal or other peoples.

Unique - Any site that contains features which occur nowhere else in the Yukon.

Wilderness Appreciation - A natural site or area valued primarily for opportunities to experience unique or representative collections of flora and/or fauna in a remote, uninhabited, and undisturbed/undeveloped setting.

Winter Range - Any site used by concentrations of animals in winter, including open-water areas and fish-wintering areas.

APPENDIX 2

A synopsis of criteria, concepts, purposes and objectives pertaining to systems of protected areas

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A synopsis of criteria, concepts, purposes and objectives pertaining to systems of protected areas

The list below contains examples of selection criteria advocated by proponents of various kinds of protected area systems. A similar, but more comprehensive, list of selection criteria exists in Appendix 2 of a report entitled **Evaluation of the "protected area" concept for the Northwest Territories** (Peterson et al. 1986), available from the Department of Renewable Resources, Government of Northwest Territories. The only portion of the Northwest Territories compilation repeated here is the inclusion of selection criteria for most of the protected area systems recognized in the Yukon, even if the system is not yet represented by any specific designated sites in the Yukon. The list in this appendix also contains several recent additional examples of protected area selection criteria which become available in 1986 after the Northwest Territories report was completed.

1. SUGGESTED CRITERIA FOR REGOGNIZED PROTECTED AREA SYSTEMS

SYSTEM: Biosphere Reserve

SOURCE: MacFarland 1983

AUTHORS' DESIGNATION: **"proposed objectives" for biosphere reserves**

LISTED CRITERIA: "The proposed objectives are:

-- Conserve representative samples of ecosystems, ecological zones or biomes, which are ecologically auto-sustainable to the maximum degree possible, and with adequate legal and political guarantees.

-- Promote and facilitate basic research and monitoring on those ecosystems, their elements and processes, as well as applied research and monitoring on their appropriate use and management, via study of existing uses and experimentation.

-- Provide opportunities and facilities for education and training of the general public (all sectors), resource managers and scientists, at all levels.

-- Promote the use of the reserves' natural and cultural resources by appropriate practices, assuring the sustained production and the permanence of productivity and those practices.

-- Promote appropriate, integrated development in the biome, ecosystem, or ecological zone, via the study, conservation and promotion of resource use practices appropriate to that ecological region."

SYSTEM: Biosphere Reserve

SOURCE: MacFarland 1983

AUTHORS' DESIGNATION: **"proposed characteristics" of biosphere reserves**

LISTED CRITERIA: "Contain representative samples of one or more ecosystems, ecological zones or biomes, which are self-sustainable to the maximum degree possible, and with an adequate legal and political base.

Offer opportunities for basic and applied research and monitoring, particularly that directed toward and supporting management and appropriate use of resources, combining human needs and ecological principles.

Offer opportunities (and eventually facilities) for education and training, for all sectors and levels of society.

Contain types of resource uses and practices which are appropriate and which can be demonstrated, maintained, improved and promoted.

Offer opportunities for promoting ecologically sound development in the region which they represent, i.e. serve as a model for such development.

Where possible, allow for rehabilitative or restorative programmes for environments totally or partially altered by inappropriate use or other phenomena.

Large enough to constitute an effective conservation unit and to accommodate the different uses without conflict.

In most cases, incorporate one or more existing or proposed protected areas."

SYSTEM: Ramsar Site

SOURCE: International Union for Conservation of Nature and Natural Resources n.d.

AUTHORS' DESIGNATION: **"criteria for identifying wetlands of international importance**

LISTED CRITERIA: "1. Quantitative criteria for identifying wetlands of importance to waterfowl.

A wetland should be considered internationally important if it:

a) regularly supports either 10,000 ducks, geese and swans; or 10,000 coots; or 20,000 waders; or b) regularly supports one per cent of the individuals in a population of one species or subspecies of waterfowl; or c) regularly supports one per cent of the breeding pairs in a population of one speciess or subspecies of waterfowl.

2. General criteria for identifying wetlands of importance to plants or animals.

A wetland should be considered internationally important if it:

a) supports an appreciable number of a rare, vulnerable or endangered species or subspecies of plant or animal; or b) is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna; or c) is of special value as the habitat of plants or animals at a critical stage of their biological cycles; or d) is of special value for its endemic plant or animal species or communities.

3. Criteria for assessing the value of representative or unique wetlands.

A wetland should be considered internationally important if it is a particularly good example of a specific type of wetland characteristic of its region."

SYSTEM: Ramsar Site

SOURCE: Smart 1974

AUTHORS' DESIGNATION: **"criteria for selection" of wetlands of international importance (Heiligenhafen criteria)**

LISTED CRITERIA: "1. Criteria pertaining to a wetland's importance to populations and species.

A wetland should be considered internationally important if it:

a) regularly supports 1% (being at least 100 individuals) of the flyway or biogeographical population of one species of waterfowl; or

b) regularly supports either 10,000 ducks, geese and swans, or 10,000 coots, or 20,000 waders (Limicolae);or

c) supports an appreciable number of an endangered species of plant or animal;or

d) is of special value for maintaining genetic and ecological diversity because of the quality and peculiarities of its flora and fauna;or

e) plays a major role in its region as the habitat of plants and of aquatic and other animals of scientific or economic importance.

2. Criteria concerned with the selection of representative or unique wetlands.

A wetland should be considered internationally important if it:

a) is a representative example of a wetland community characteristic of its biogeographical region; or

b) exemplifies a critical stage or extreme in biological or hydromorphological processes; or

c) is an integral part of a peculiar feature.

3. Criteria concerned with the research, educational or recreational values of wetlands.

A wetland should be considered internationally important if it:

a) is outstandingly important, well-situated and well equipped for scientific research and education; or

b) is well-studied and documented over many years and with a continuing programme of research of high value, regularly published and contributed to by the scientific community; or

c) offers special opportunities for promoting public understanding and appreciation of wetlands, open to people from several countries.

4. Criteria concerned with the practicality of conservation and management.

Notwithstanding its fitness to be considered as internationally important on one of the Criteria set out under 1, 2 and 3 above, a wetland should only be designated for inclusion in the List of the Ramsar Convention if it:

a) is physically and administratively capable of being effectively conserved and managed; and

b) is free from the threat of a major impact of external pollution, hydrological interferences and land use or industrial practices.

c) A wetland of national value only may nevertheless be considered of international importance if it forms a complex with another adjacent wetland of similar value across an international border."

SYSTEM: World Heritage Site

SOURCE: Bennett 1979

AUTHOR'S DESIGNATION: **"Cultural and natural criteria to govern the inclusion of sites on the World Heritage List"**

LISTED CRITERIA: "The cultural and natural criteria to govern the inclusion of sites on the World Heritage List as stated in the **Operational Guidelines** are:

Criteria for the Inclusion of Cultural Properties

9. Outstanding universal value will be recognized when a cultural property, as defined in Article 1, (of the Convention), submitted for

inclusion in the World Heritage List is found to meet one or more of the following criteria. Therefore each property should:

i) represent a unique artistic or aesthetic achievement, as a masterpiece of the human creative spirit;
ii) be of outstanding importance owing to its influence, over a span of time or within a cultural area of the world, on subsequent developments in architecture, monumental sculpture, garden and landscape design, or human settlements;
iii) be unique, extremely rare or of great antiquity;
iv) be among the most characteristic examples of a type of structure, the type representing an important cultural, social, artistic, technological or industrial development;
v) be a characteristic example of a significant traditional style of architecture, method of construction, or human settlement, that is fragile by nature or has become vulnerable under the impact of irreversible socio-cultural or economic change;
vi) be most importantly associated with ideas or beliefs, with events or with persons, of outstanding historical importance or significance.

10a) In every case, consideration should be given to the state of preservation of the property, which should be evaluated relatively, that is, in relation to property dating from the same period and of the same type and category;
b) In addition, the property should meet the test of authenticity in design, materials, workmanship, and setting; authenticity does not limit consideration to original form and structure but includes all subsequent modifications and additions, over the course of time, which in themselves possess artistic or historical values.

Criteria for the Inclusion of Natural Properties

11. Outstanding universal value will be recognized when a natural heritage property as defined in Article 2 (of the Convention), submitted for inclusion in the World Heritage List is found to meet one or more of the following criteria. Therefore properties should:

i) be outstanding examples representing the major stages of the earth's evolutionary history. This would include sites which represent the major "eras" of geological history such as "the age of reptiles" wnere the development of the planet's natural diversity can well be demonstrated and as the "ice age" where early man and his environment underwent major changes;
ii) be outstanding examples representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment. As distinct from the periods of the earth's development, this focusses upon on-going processes in the development of communities of plants and animals, landforms and marine and fresh water bodies. They would include, for example: a) as geological processes, glaciation and volcanism; b) as biological evolution, biomes such as tropical rainforests, deserts and tundra; c) as interaction between man and his natural environment, terraced agricultural landscapes;

iii) contain unique, rare or superlative natural phenomena, formations or features or areas of exceptional natural beauty, such as superlative examples of the most important ecosystems to man, natural features (rivers, mountains, waterfalls), spectacles presented by great concentrations of animals, sweeping vistas covered by natural vegetation and exceptional combinations of natural and cultural elements;

iv) be habitats where populations of rare or endangered species of plants and animals still survive. This would include those areas where concentrations of animals of universal interest and significance are found.

It should be realized that individual sites may not possess the most spectacular or outstanding single example of the above, but when the sites are viewed in a broader perspective with a complex of many surrounding features of significance, the entire area may qualify to demonstrate an array of features of global significance.

12. In addition to the above criteria, the sites should also meet the conditions of integrity.

i) the areas described in 11. i) should contain all or most of the key interrelated and interdependent elements in their natural relationships; for example, an "ice age" area would be expected to include the snow field, the glacier itself and samples of cutting patterns, deposition and colonization (striations, moraines, pioneer stages of plant succession, etc.);

ii) the areas described in 11. ii) should have sufficient size and contain the necessary elements to demonstrate the key aspects of the process and to be self-perpetuating. For example, an area of "tropical rain forest" may be expected to include some variation in elevation above sea level, changes in topography and soil types, river banks or oxbow lakes, to demonstrate the diversity and complexity of the systems;

iii) the areas described should contain the ecosystem components required for the continuity of the species or of the objects to be conserved. This will vary according to individual cases; for example, the protected area for a waterfall would include all, or as much as possible, of the supporting upstream watershed; or a coral reef area would be provided with control over siltation or pollution through the stream flow or ocean currents which provide its nutrients;

iv) the areas described in 11. iv) should be of sufficient size and contain the necessary habitat requirements for the survival of species.

SYSTEM: National Park, National Park Reserve

SOURCE: Government of Northwest Territories and Parks Canada 1981

AUTHORS' DESIGNATION: **"criteria" used in the selection of potential national parks in Canada**

LISTED CRITERIA: "Representative natural areas of Canadian significance will be identified within each land and water natural region of Canada according to the following criteria:

i) the area must portray the diverse geological, physiographical, oceanographical and biological themes of a natural region; and
ii) the area must have experienced minimum modification by man or, if significant modification has occurred, must have potential for restoration to a natural state.

Potential national parks will be selected from among identified representative natural areas of Canadian significance according to the following criteria:

i) the area will be within a natural region which does not already have representation in the system of national parks; and

ii) the area will be of a size and configuration so as to:

a) include a definable ecological unit(s) whose long-term protection is feasible;
b) offer opportunities for public understanding and enjoyment;
c) result in minimum long-term disruption of the social and economic life in the surrounding region; and
d) exclude existing permanent communities.

In selecting potential national parks consideration will be given to:

i) the existence of possible threats to the natural environment of the area;
ii) competing land uses;
iii) the geographic balance of national parks throughout Canada;
iv) the location and objectives of other protected natural areas; and
v) international criteria for national parks."

SYSTEM: National Marine Park

SOURCE: Parks Canada 1984b

AUTHORS' DESIGNATION: **"selection criteria for National Marine Parks"**

LISTED CRITERIA: "Marine parks will be selected from among confirmed marine natural areas of Canadian significance according to the following criteria:

i) the area will be within a marine region which does not already have sufficient theme representation in the system of marine parks; and

ii) the area will be of a size and configuration so as to:

a) include a marine environment and, usually, coastal and insular areas whose long term conservation is feasible;
b) offer opportunities for public understanding and enjoyment;
c) benefit the social and economic life in the surrounding region;
d) exclude existing permanent communities and native outposts which are occupied seasonally.

In selecting marine parks consideration will be given to:

i) the existence of possible threats to the natural environment of the area, including those "upstream", whether marine or coastal;
ii) the location of, and avoidance of significant effect upon, critical commercial fishing areas;
iii) minimizing conflict with established and proposed coastal and marine resource uses such as navigation routes, D.N.D. Exercise Areas, and exploration for and exploitation of non-renewable resources;
iii) the location and objectives of other protected marine and coastal areas throughout Canada;
iv) international criteria for marine parks.

A composite marine park area consisting of two or more non-contiguous areas may be considered where it will facilitate achieving park identification and selection objectives.

Marine parks will be selected in consultation with other federal departments and agencies through a Marine Parks Interdepartmental Committee, provincial and territorial governments and with the interested public.

Adjustments to the boundaries of marine parks will be determined according to the policies for selecting marine parks."

SYSTEM: National Marine Park

SOURCE: Parks Canada 1986b

AUTHORS' DESIGNATION: **"purpose of a national marine park"**

LISTED CRITERIA: "The creation of each national marine park may also serve one or more of the following purposes:

- conservation of marine species, habitats or ecosystems that are unique, threatened or endangered;
- protection of valuable archaeological or historical sites;
- provision of a focus for tourism development;
- preservation of baseline sites for monitoring the environmental effects of man's activities and for research into marine ecosystems and processes."

SYSTEM: National Historic Site

SOURCE: Humphries 1985

AUTHORS' DESIGNATION: **"historic sites and monuments selection criteria" for the Historic Sites and Monuments Board of Canada**

LISTED CRITERIA: "The general criteria for the selection of persons, places and events by the Board are:

i) persons who have had a significant impact on Canadian history, irrespective of the country in which all or part of their achievement occurred;

ii) events or movements which have shaped Canadian history or that illustrate effectively the broad cultural, social, political, economic, or military themes of Canadian history;

iii) places which shed light or illustrate effectively the culture of a prehistoric people, or are associated with important archaeological discoveries;

iv) structures which embody the distinguishing characteristics of an architectural and engineering type, are exceptionally valuable for the study of a style or method of construction of its period, or are examples of the work of a master builder, designer, engineer or architect."

SYSTEM: Canada Landmark

SOURCE: Department of Indian Affairs and Northern Development 1978

AUTHORS' DESIGNATION: **criteria for identifying exceptional natural sites of Canadian significance and for selecting potential National Landmarks**

LISTED CRITERIA: "Exceptional natural sites of Canadian significance will be identified across Canada according to the following criteria:

i) The site must contain a natural feature or phenomenon which is unique or rare in Canada or the world, or the site must be the best example of a particular natural theme component in Canada; and

ii) The site must have experienced minimum modification by man or, if such modification has occurred, the main feature must be unaffected and the site must have potential for restoration to a natural state.

Exceptional natural sites of Canadian significance will be identified regardless of their current protected status or jurisdiction.

Selecting Potential National Landmarks

Potential national landmarks will be selected according to the following criteria:

i) The site will be an exceptional natural site of Canadian significance; and
ii) The site will be of high scientific value and public interest; and
iii) The site will be of a size and configuration so as to:

a) encompass a natural feature or phenomenon whose long-term protection is feasible; and

b) offer opportunities for research, public understanding and appreciation.

In selecting potential national landmarks consideration will be given to:

i) the degree of protection or threats to the natural environment of the site; and
ii) competing land uses; and
iii) geographic balance of national landmarks throughout Canada; and
iv) the location and objectives of other protected natural areas; and
v) appropriate international criteria."

SYSTEM: Canadian Heritage River

SOURCE: Parks Canada 1984a

AUTHORS' DESIGNATION: **"heritage value guidelines" and "integrity guidelines" for the Canadian Heritage Rivers System**

LISTED CRITERIA: "Natural Heritage Values

Outstanding Canadian natural heritage value will be recognized when a river environment meets one or more of the following guidelines:

- Is an outstanding example of river environments as they are affected by the major stages and processes in the earth's evolutionary history which are represented in Canada. This would include rivers which best represent the major periods of geological time in which the surface of the earth underwent major changes and stream modification;
- Is an outstanding representation of significant ongoing fluvial, geomorphological and biological processes. As distinct from the periods of the earth's development, this focuses upon ongoing processes in the evolution and form of the river and its associated plant and animal communities;
- Contains along its course unique, rare or outstanding examples of natural phenomena, formations or features, or areas of exceptional natural beauty;
- Contains along its course habitats of rare or endangered species of plants and animals. This would also include areas where outstanding concentrations of plants and animals of Canadian interest and significance are found.

Human Heritage Values

Outstanding **human heritage** value will be recognized when a river environment meets one or more of the following guidelines:

- Is of outstanding importance owing to its influence, over a period of time, on the historical development of Canada through a major impact upon the region in which it is located or beyond; this would include its role in such significant historical themes as native people, settlement patterns and transportation;
- Is strongly associated with persons, events, movements, achievements, ideas or beliefs of Canadian significance;

- Contains historical or archaeological structures, works or sites which are unique, rare or of great antiquity;
- Contains outstanding examples or concentrations of historical or archaeological structures, works or sites which are representative of major themes in Canadian history.

In every case consideration should be given to the state of preservation of the river environment relative to its visual appearance during the historic period in which the waterway is considered to be of outstanding importance.

Recreational Values

Recognizing the man-land relationship essential to recreation, outstanding **recreational** value will be recognized when a river environment meets the following general guidelines:

- Possesses an appropriate combination of recreational opportunities and related natural values which together provide a capability for an outstanding recreational experience;
- Recreational opportuntiès include such acitivities as boating, hiking, swimming, camping, wildlife viewing, and human heritage appreciation;
- Natural values include natural visual aesthetics, that is, diversity and quality of scenic beauty and physical essentials, such as sufficient flow, navigability, rapids, accessibility and suitable shoreline;
- Be capable of supporting recreational uses without significant loss or impact on its natural, historical or aesthetic values.

Integrity Guidelines

In addition to the specific "Heritage Value Guidelines", a river and its immediate environment must meet "Integrity Guidelines" for designation to the Canadian Heritage Rivers System:
- They should be of sufficient size and contain all or most of the key interrelated and interdependent elements to demonstrate the key aspects of the processes, features, activities or other phenomena which give the river its outstanding value;
- They should contain those ecosystem components required for the continuity of the species, features or objects to be protected;
- The quality of the water should be such as to provide for the continuity and/or improvement of the resources upon which "value" the system has been determined."

SYSTEM: Migratory Bird Sanctuary

SOURCE: Gillespie and McComb (1984)

AUTHORS' DESIGNATION: **"criteria used in the selection of the areas of importance to migratory birds in Canada"**

LISTED CRITERIA: "Qualitative criteria:

1. Ecological importance - sites that have a special value to migratory birds at a critical stage in their biological cycle: geese -

nesting, moulting, staging; seabirds - nesting, feeding; sea ducks - nesting, moulting; shorebirds - staging; and/or

2. Diversity - sites that support concentrations of several different species; and/or

3. Rarity - sites that support rare and endangered species identified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or the Convention on International Trade in Endangered Species (CITES), particularly those that support collections of rarities; these include species which are in danger of extinction, those vulnerable to specific habitat changes, species considered rare because of their small populations or restricted local distribution and other species needing particular attention because of the specific nature of their habitat; and/or

4. Fragility - sites wherein the intrinsic sensitivity of the ecosystem to environmental pressures is evident; and/or

5. Recorded history, research and educational value - sites which, because of detailed documentation extending back over a long period of time, are useful in monitoring population changes.

Quantitative Criteria

In the District of Mackenzie and Keewatin, and in Franklin south of Lancaster Sound and Viscount Melville Sound, the Criteria for Identifying Wetlands of International Importance (arising from the 1971 Ramsar Convention), revised in 1980 at a conference in Cagliari, Sardinia, were adopted with modifications for Canada, i.e.:

1. regularly supports 10,000 or more geese and swans, or 20,000 shorebirds, or 50,000 seabirds; or

2. regularly supports 5% of the individuals in a population of one species or subspecies; or

3. regularly supports 1% of the breeding pairs in a population of one species or subspecies.

North of 75°N, where suitable migratory bird habitat is very restricted, the qualifying threshold numbers were lowered to 250 geese or shorebirds, and 5,000 seabirds (swans are so scarce north of 75°N that, at present, they may be ignored)."

SYSTEM: Yukon Territorial Parks

SOURCE: Yukon Territorial Parks Unit, Department of Renewable Resources 1986

AUTHORS' DESIGNATION: **"selection criteria" for Yukon Territorial Parks**

LISTED CRITERIA: "A. Nature Preserve

1. The site must contain outstanding natural feature(s) such as; flora, fauna, ecology, geomorphology, etc.

2. The site must be of sufficient size to protect its natural feature(s).

3. The number of Nature Preserves established shall be largely dependent on the number of suitable sites identified.

B. Natural Environment Park

1. The site shall contain one or more examples of the Yukon's natural features in areas such as; geology, biology, ecology, etc.

2. Natural Environment Parks shall be selected to provide a variety of representative natural themes in each of the Yukon's geographic regions.

3. Natural Environment Parks boundaries shall be dependent on the characteristics and extent of the natural feature(s) being contained.

C. Recreation Park

1. Recreation Parks shall be located in proximity to the resident and travelling tourist populations.

2. Landscape character, durability of the site for intensive use, and number of use opportunities shall be the criteria applied to the selection of site.

3. In all cases these areas shall be sufficiently large to provide for a wide variety of recreation uses.

D. Historic Parks

1. The site must contain a significant major historical or archaeological feature(s)."

2. OTHER RECENT EXAMPLES OF PROTECTED AREA SELECTION CRITERIA

SOURCE: Bonner 1984

AUTHOR'S DESIGNATION: **"criteria for the selection of Antarctic specially protected areas"**

LISTED CRITERIA: "a) representative examples of the major Antarctic land and freshwater sysems;

b) areas with unique complexes of species;

c) areas which are the type locality or only known breeding habitat of any plant or invertebrate species;

d) areas which contain especially interesting breeding colonies of birds or mammals;

e) areas which should be kept inviolate, so that in the future they may be used for purposes of comparison with localities which have been disturbed by man."

SOURCE: Götmark, Ahlund and Eriksson 1986

AUTHORS' DESIGNATION: **Comments on the use of indices for assessing the conservation value of natural areas**

LISTED CRITERIA: "1. Some 'scientific' criteria such as naturalness and typicalness are hard or impossible to quantify.

2. Evaluation criteria are often correlated (e.g., the larger the area, the more species; the more species, the more rarities). Therefore, if several criteria are included in an index, scores given to different criteria cannot simply be summed, as this may overestimate the value of the 'best' sites.

3. Indices incorporating several criteria and several groups of organisms yield 'average' conservation values for different areas, and then may hide sites with outstanding qualities with respect to one criterion or organism group. Different criteria and organisms should therefore be considered both separately and together.

4. The weighting of different criteria and groups of organisms (for example, should insects be 'valued' less than birds?) is a problem.

A better strategy might be to construct indices only for single evaluation criteria."

SOURCE: Public Advisory Committees 1986

AUTHORS' DESIGNATION: **"objectives for an Alberta conservation strategy"**

LISTED CRITERIA: "Objective One

To maintain essential ecological processes and life support systems (such as soil regeneration and protection, recycling of nutrients, and the cleansing of waters) on which human survival and development depend.

Objective Two

To preserve genetic diversity (the range of genetic material found in the provinces organisms), on which depend the functioning of many of the above processes and life-support systems, the research necessary for the protection and improvement of cultivated plants and domesticated animals, the micro-organisms so vital to our survival, and the security of the many industries that rely upon living resources.

Objective Three

To achieve sustainable use of species and ecosystems (notably fish and wildlife, forests, agricultural soils, and grazing lands), which support some of our most important industries (tourism, forest products, farming).

Objective Four

To provide for the recreational, spiritual, aesthetic, and other non-material needs of Albertans by maintaining and developing diverse opportunities for the use of natural resources.

Objective Five

To maintain and improve the quality of life in the urban environment, where the majority of Albertans now live and work.

Objective Six

To use and manage our non-renewable resources in the interests of developing a long-term sustainable economy for Albertans."

SOURCE: Smith and Theberge 1986a

AUTHORS' DESIGNATION: **"ecological criteria to evaluate the biotic diversity of candidate environmentally significant areas (ESA's) in the Northwest Territories"**

LISTED CRITERIA: "The method is part of an evaluation system based on five ecological criteria.

- Three measures of floristic diversity - number of species, number of genera, and number of families.

- Two measures of animal species diversity - number of vertebrate species and number of conspicuous vertebrate species."

SOURCE: Smith and Theberge 1986b

AUTHORS' DESIGNATION: **"criteria for evaluating natural areas synthesized from 22 selected evaluation systems"**

LISTED CRITERIA:

Criterion	Type of criterion
Rarity, uniqueness	Biotic, abiotic
Diversity	Biotic, abiotic
Size	Biotic, abiotic, planning and management
Naturalness	Biotic, abiotic
Productivity	Biotic
Fragility	Biotic, abiotic
Representativeness, typicalness	Biotic, abiotic
Importance to wildlife, abundance	Biotic
Threat	Planning and management
Educational value	Cultural
Recorded history/research investment	Cultural
Scientific value	Cultural
Recreational value	Cultural
Level of significance	Planning and management
Consideration of buffers and boundaries	Planning and management
Ecological/geographical location	Planning and management
Accessibility	Planning and management
Conservation effectiveness	Planning and management
Cultural resources	Cultural
Shape	Planning and management, biotic

SOURCE: Smith and Theberge 1986b

AUTHORS' DESIGNATION: **"examples of significance often assessed for cultural resources based on the work of Schiffer and Gummerman (1977) and Schiffer and House (1977)"**

LISTED CRITERIA: "Scientific significance - whether a site's "further study may be expected to help answer current research question".

Historical significance - whether a site possesses good examples of resources characteristic of a particular "prehistoric culture, historic tribe, period of time, or category of human activity" and generally involves a cultural resource classification.

Ethnic significance - "religious, mythological, social, or other special importance for a discrete population".

Public significance - value for public education and tourism.

Legal significance - fulfillment of criteria defined by legislation."